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BARTONELLA MURIS-RATTI AND THE INFECTIOUS ANAEMIA OF RATS.

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These papers* may well be taken together, since all are contributory to a well-defined subject and three of them are, or include, historical surveys of that subject by protagonists in the field.

LAUDA discovered (1925) that rats when deprived of their spleen usually develop, between the 3rd and 10th days afterwards, a severe and commonly fatal anaemia; the animal becomes emaciated, its blood shows in an extreme degree all the familiar features of pernicious anaemia, and after death all the organs appear bloodless, and small (sometimes confluent) patches of necrosis may be found in the liver. LAUDA has likened the blood-picture to that of acute yellow atrophy of the liver in man, and he originally attributed it to an invisible virus —an "endogenous virus" normally occulted by the spleen and unkennelled in full fury by the removal of that body. LAUDA'S present paper is a survey of work that has followed from this striking discovery; but as SCHILLING points out in one of his papers included here, the restrictive influence exercised by the spleen on certain similar infective processes, as demonstrated by the removal of that organ, is a phenomenon that had attracted the attention of several earlier observers. LAUDA'S paper is not fully documented.

Independent of LAUDA'S discovery, Martin MAYER in 1921 (see this *Bulletin*, Vol. 18, p. 263) had noticed in gravely anaemic rats heavily infected with trypanosomes certain inclusions in the red blood-corpuscles, which, after considering the possibility of their being merely products of corpuscle-degeneration, he came to regard as parasites, probably congeneric with the Bartonella of Oroya fever, proposing for them the specific designation *Bartonella muris*. Subsequently he and his colleagues BORCHARDT and KIKUTH (this *Bulletin*, Vol. 24, p. 831) recognized them as the infective agents of pernicious anaemia in rats (they are now generally recognized as the material bodies of LAUDA'S incorporeal "virus"), and thus gave the necessary point and impetus to LAUDA'S theory of a species of anaemia referable to the outburst of a latent infection normally held in subjugation by the spleen. MAYER'S present papers repeat and continue the interesting story.

* See references, pp. 523–4.

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MAYER'S colleague, KIKUTH, who has discovered another form or species of Bartonella—a form now stated by V. SCHILLING to have a close resemblance to his own "Erythrokonten"—associated with haemolytic anaemia in a dog, now gives a well-documented historical review of the Bartonella bodies as excitants of anaemia; and upon his and the two preceding papers the following survey of the present voluminous stream from the springs set in motion by LAUDA and MAYER is based, papers already noticed in this *Bulletin* (Vol. 18, p. 263, Vol. 24, p. 831 and p. 875, Vol. 25, p. 254, and pp. 835–839) also being comprised in this survey.

We are reminded in this series of papers that the bodies occurring in the blood of Oroya fever patients, and named after their original discoverer BARTON, were not at first accepted as independent organisms, but were recognized as such by DARLING in 1911, though they were not officially named Bartonella by STRONG until 1915. We are also reminded that STRONG and his colleagues were much taken with their affinity to the genus Grahamella instituted by BRUMPT in 1911—an affinity noted by several later observers. But now that the local habitation of the Bartonella bodies among the Protista is settled, it seems likely that the inevitable disturbances over names may be expected, upsetting all significant associations with things, since, as will be recounted further on, BRUMPT now tables the statement that the Bartonella of rat-anaemia (which is said to be only specifically distinct from the Bartonella of Oroya fever) is *generically* the same as Grahamella.

The species here in court, which until the case is decided by general consent, we may still refer to as *Bartonella muris*, appears in the blood of rats, from 2 to 7 days after splenectomy, in several guises, variously described as coccoids, diplococcoids, dumb-bells, and rods which sometimes form chains or clusters. They are gram-negative, they stain well in Giemsa, and they have been cultivated by MAYER and others, though METELKIN and FORD and ELIOT here report failure in all their attempts at culture. As an invisible latent infection, quickly brought into view by excision of the spleen, it appears to be in some places (as Hamburg) almost characteristic of the rat; although there are other places (as the Sicilian town Catania) and there are certain breeds of rats (as at the Wistar Institute) where it does not exist. Moreover, though it commonly exists as a latent infection, JAFFE and WILLIS state (see this *Bulletin*, Vol. 25, p. 835) that in rats in Illinois, four weeks old, with the spleen intact, Bartonella bodies may be numerous in the blood. Furthermore, although the infection is most surely brought out by desplenation, it may also sometimes be excited by chemotherapeutic shock and possibly by other kinds of injury. Its presence in the blood in desplenated rats is almost invariably associated with pernicious anaemia, and that this association is causal is a logical inference from the facts that it has been observed to precede the anaemia, that the severity of the anaemia varies with the intensity of the infection, and—as FORD and ELIOT have observed in the transmission experiments reported in their present paper—(*a*) that washed Bartonella-infected corpuscles always produce the anaemia, whereas the corresponding plasma either fails to do so or else causes only a tardy and mild anaemia with few Bartonellae in the blood; (*b*) that the thermal death-point of Bartonella and the thermal extinction-point of haemoclastic virulence of the Bartonella-infected blood are identical, and (*c*) that the Bartonella may be transferred from rat to rat through

thirty generations of infection and always proves concomitant with the haemoclastic virulence. The experiments reported by VEDDER, too, have neatly confirmed both the causal relation of the Bartonella to the haemolytic anaemia and the restrictive influence exercised by the spleen. In these experiments when a part of the spleen was left unexcised the anaemia did not occur, and when the excised spleen was implanted in the scrotum it protected against the anaemia for some time ; spleen extract, however, had no such effect (nor had liver extract —" pernaemon "—any curative action) ; FORD and ELIOT, too, in their transmission experiments by inoculation, found that the admixture of spleen-pulp with infected blood had not any neutralizing effect. The controlling function of the spleen has been ingeniously corroborated by CANNON and MCCLELLAND, who find that in their Wistar Institute breed of rats, which is void of the latent infection, the average weight of the spleen is about a quarter of one per cent. of the body-weight, whereas in the ordinary infected rat it is about three times as great.

The duration of the visible infection in the blood of the desplenated rat varies inversely with its intensity. According to MAYER and KIKUTH, a heavy infection may be fatal in a few days, but a slight infection has been observed by them to continue as long as 30 days. V. SCHILLING in his latest paper (1929) states that he has observed an infection that lasted 56 days, and an infection transmitted to a desplenated mouse to last up to 72 days ; and in this paper he also makes the significant statement that in these long-continued infections certain cells of the bone-marrow may be found charged with inclusions that probably are Bartonella bodies.

Some facts mentioned by LAUDA, bearing on the evolution of immunity, may here be noticed ; namely, that the Bartonella infection has occasionally been observed in apparently-healthy spleen-entire rats, and that such rats, when desplenated, suffer only a mild form of anaemia.

The study of the natural mode of transmission of the disease among rats is made peculiarly difficult by the coupled obstructions that the infection visibly declares itself only in the desplenated rat and that no given spleen-entire rat may now be assumed to be clear of a (latent) standing infection. MAYER is satisfied that he overcomes this difficulty by curing a desplenated rat of its infection (by a moderate dose of salvarsan) thus rendering it available for experiment. CANNON and MCCLELLAND put their trust in a stock of laboratory rats from the Wistar Institute, which stock is free of the latent infection. Another obstruction is the prevalence of minute and inconspicuous ectoparasites of the rat ; MAYER overcomes this by the use of lysoform, and then by keeping his clean rats isolated under a sterile ménage (and dietary).

In the search for the natural route MAYER tubed a small quantity of infected liver-pulp into the stomach of a rat so sterilized, and the animal acquired a slight infection, from which it recovered. SORGE, however, could not infect rats by feeding them on infected liver (see this *Bulletin*, Vol. 25, p. 839). Several observers have transmitted the infection by contact ; and CANNON and MCCLELLAND, using Wistar Institute rats carefully cleansed from ectoparasites, here describe how they infected them by means of rat-lice (*Haematopinus spinulosus*) taken from desplenated infected rats. M. MAYER also, in his paper in *Klin. Woch*, Dec. 9, 1928, describes how he isolated and kept under a sterile ménage and dietary some desplenated rats that had been sterilized inside and outside in the way already mentioned, and in course of time

obtained from them a progeny of 13 innocent young. When they were about 2½ months old these carefully kept young were desplenated and found to be free of infection. About 2½ months afterwards eight of these immaculate young were allowed in different ways to become infested with lice (*Haematopinus spinulosus*) from a very lousy rat, and from 19 to 24 days afterwards, all but one of them had become infected with Bartonella and two had died from anaemia. The controls all remained healthy and free of infection.

B. muris ratti has been communicated by the usual laboratory methods to other desplenated rodents (mouse and hamster) as well as to desplenated rats that have recovered from an earlier infection, but SORGE (*l.c.*) could not transfer it to rabbits, guineapigs, monkeys, or dogs desplenated or otherwise.

The two papers, one by LAUDA, the other by KIKUTH, both entitled *Die Bartonellen*, are reviews of the group, and to KIKUTH's paper a very full bibliography is attached. The following species have to be noticed: (1) *B. bacilliformis* of Strong (1915), the anaemia excitant in Oroya fever. (2) *B. muris* of Mayer (1921), excitant of rat anaemia. (3) *B. canis* of Kikuth (1928) discovered in a dog suffering from canine piroplasmosis, as a massive infection of the red corpuscles, six days after the animal's spleen had been excised; at the same time a rapid decrease in the number of red corpuscles occurred, a fall of haemoglobin to 20 per cent., and much aggravation of the piroplasmosis. Subsequent experimentation seemed to show that although latent infection is uncommon, the spleen in dogs exercises a restraint upon the infection. KIKUTH also mentions (4) another species, discovered by REGENDANZ and himself in two species of desplenated opossums in Brazil; and he thinks that (5) the inclusions noticed by NOGUCHI in red corpuscles of a hamster and a white mouse, and (6) the organism observed by von NAUCK in the blood of a squirrel in Peking—all these being desplenated animals—as well as (7) some apparently non-pathogenous inclusions observed by ZUELZER in the red corpuscles of a field-mouse with spleen intact, should all be classed with Bartonella. LAUDA, after examining the original preparations, here declares (8) the inclusions noticed by EDELMANN in a typical case of Werlhoff's *morbus maculosus* in man to be Bartonella. (9) The "bacilliform bodies (Grahamella Bartonella)" observed by SHOUSHA and ALY (1928) damaging the red corpuscles in the Egyptian gazelle must also, probably, be included in the genus. We come finally to the "Erythrokonten" and other ambiguous but interesting forms that V. SCHILLING has separated.

Erythrokonten (see this *Bulletin*, Vol. 25, p. 838) are bacilliform bodies observed by V. SCHILLING in 39 out of 42 cases of pernicious anaemia in man, but considered by him to be related neither naturally to Bartonella nor causally to the pernicious anaemia, an opinion from which LAUDA, MAYER and others dissent. In his latest paper, however (Jan. 1929), SCHILLING foreshadows a possible change of opinion, brought about by some new forms of corpuscle-inclusions that have attracted his attention in the blood of desplenated white mice. One of these, separated under the name (11) *Eperythrozoon coccoides*, consists of minute ($\frac{1}{4}\mu$) not (or very slightly) pathogenous, coccus-like bodies adherent in clusters to the surface of the red corpuscles. In a text-figure, where they are compared with Bartonella and Grahamella, they are shown as rings or disks. "The infection shows itself independent of a simultaneous Bartonella infection and can subside or intermit

in the presence of it"; it is transferable to white mice by inoculation, especially if the animals have been desplenated; it subsides spontaneously, becoming latent. A latent infection becomes strongly intensified after removal of the spleen, sometimes the day after. The other and more significant new form, to which has been given the name (12) *Bartonella muris musculi* var. *albinei* Schilling 1929, includes bacilliform bodies resembling both *B. canis* of Kikuth and *B. bacilliformis* of Strong and also, like *B. canis*, resembling Schilling's Erythrokonten, and it would appear that it is this likeness to one another of things that resemble the same thing that has suggested to Schilling the necessity for reconsidering the sunderance of the Erythrokonten and Eperythrozoa from Bartonella.

There still remains for notice a paper by Brumpt which, *per purum tonans*, threatens to annihilate the name Bartonella; and as nomenclature is very much an independent subject, and generic definition more than most things human a matter of opinion, this paper is best considered apart.

In 1911 Brumpt encountered in the blood of a mole the intracorpuscular parasite discovered in 1905 in that species of animal by Graham Smith at Cambridge, and on a study of it he established the genus *Grahamella* Brumpt 1911, genotype *Grahamella talpae*. Species of this genus are now known to be distributed in 21 species of rodents, 3 species of insectivores, 3 species of bats, a monkey, and perhaps a bovine; but only one author—O'Brien cited by Macfie—has associated its presence with any morbid symptoms. Brumpt notices as a coincidence that it was in 1905 that Barton first observed the bodies eventually (in 1915) named after him, in persons suffering from Oroya fever.

In 1914, in São Paolo, Brumpt several times found in the blood of brown rats a parasite which he seems to have set apart for a time, since in 1915 it was brought to light in the same place (São Paolo) by Carini, who named it *Grahamella muris*.

Since that time Brumpt has studied the parasites of anaemic desplenated rats in his own laboratory and has again referred to his specimens from São Paolo, and he now states in short that "it is incontestable that the parasite of rat anaemia belongs to the same genus as the parasite of the mole made known by Graham Smith in 1905." So that if this opinion becomes generally acccepted *Bartonella muris*, Mayer 1921 will be a synonym of *Grahamella muris* Carini 1915.

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SHOUSHA (A. T.) & ALY (M.). Bacilliform Bodies (Grahamella Bartonella) in the Erythrocytes of the Egyptian Gerbille.—*Jl. Egyptian Med. Assoc.* 1928. Nov. Vol. 11. No. 9. pp. 280–283. With 1 coloured plate. [14 refs.]

SCHILLING (Victor). Eperythrozoon coccoides, eine neue durch Splenektomie aktivierbare Dauerinfektion der weissen Maus. [*Eperythrozoon coccoides* ; a New Latent Infection of the White Mouse awakened by Splenectomy.]—*Klin. Woch.* 1928. Sept. 23. Vol. 7. No. 39. pp. 1853–1855. With 2 text figs. [I. Med. Clinic, Univ., Berlin.]

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BRUMPT (E.). Identité des genres *Grahamella* Brumpt 1911 et *Bartonella* Strong, Tyzzer, Brues, Sellards et Gastiaburu 1915. [Identity of the Genera Grahamella and Bartonella.]—*C.R. Acad. Sci.* 1928. Dec. 3. Vol. 187. No. 23. pp. 1079–1081.

HELMINTHIASIS.

PORTER (Annie). **Notes on the Distribution of Animal Parasites in Street Dust examined in Johannesburg from 1925 to 1928.**—*Jl. Med. Assoc. South Africa.* 1928. Nov. 10. Vol. 2. No. 21. pp. 571–577.

Gross dust from the street-gutters or hollows in roads in Johannesburg has been examined for evidence of animal parasites injurious to human health and to obtain information on the rôle of wind and road dust in the propagation of helminth disease. The dry street dust was examined directly under the microscope. In addition, suspensions were made in distilled water. The results are set out in tabular statements. The animal parasites found are listed with the various localities in which they were found. The list is too extensive for citation here. The article concludes with some general remarks. It is suggested that further efforts in the provision of street watering should be made during the dry season. The finding of ova of worms in places where building operations are in progress indicates the need for better supervision of natives and of greater care in the use of the sanitary buckets. [The viability of the ova found in dry street dust is not discussed.]

R. T. Leiper.

BLIGH-PEACOCK (N.). **Intestinal Worm Disease in the Ankole District, Uganda.**—*Kenya & East African Med. Jl.* 1929. Jan. Vol. 5. No. 10. pp. 333–335.

Useful statistics have been derived from the records kept by a medical officer on "Safari," in which the display of actual specimens of Ascaris and Taenia has enabled diagnosis to be made from the patients' statement as their occurrence in the stools. In 8 successive working days at Katwe-Ibanda in Northern Ankole, Uganda, in April, 1927, it was found that 46 per cent. of the sick-infant population was extensively infested with *Ascaris lumbricoides*. The author is of opinion that the questioning of the child's mother gave a proportionate accuracy of not less than 75 per cent. Santonin and calomel, followed, if necessary, by glycerine enemata, formed the routine treatment.

R. T. L.

WATSON (W. H.). **Notes on the Incidence of Hookworm and other Helminths in North Nyasa.**—*Nyasaland Protectorate Ann. Med. Rep. for Year ending 31st December, 1927.* Appendix I. pp. 25–27.

The percentage of ova in a survey of 100 stools made at Karonga is tabulated. Hookworm occurred in 64 per cent., *Schistosoma mansoni* in 15, Ascaris in 5, *Taenia saginata* in 4, Strongyloides in 3, and whipworm in 1 per cent. Drainage is an important factor in hookworm incidence. The low infestation with Ascaris is probably due to the fact that the inhabitants obtain drinking water from the lake.

Haemoglobin percentages taken by the Tallqvist Haemoglobin Scale showed an average of 67·95 in 100 males and 62·6 in 100 females. Malaria cannot, however, be excluded from these cases. In the upland area of Nkamanga the average percentage was slightly higher. 55 High School boys and men at Livingstonia Mission gave an average of 83·9. They are accustomed to the use of latrines and are excellent examples of what sanitary education can do. The incidence of filarial infections at Karonga is as follows: *Microfilaria bancrofti* 16·5 per cent. (or 31 out of 187), and *Microfilaria perstans* 1 per cent. (2 out of 187).

R. T. L.

RAYNAL (Jean). Helminthiases intestinales chez le Malgache. [**Intestinal Helminth Infection in the Malagasy.**]—*Bull. Soc. Path. Exot.* 1928. Dec. 12. Vol. 21. No. 10. pp. 868–875. [1 ref.]

Studies on 620 of the Madagascar troops garrisoned at Marseilles gave a percentage of 77·42 per cent. with helminth infections. Previous anthelmintic treatment apparently effected a reduction only in the numbers of parasites rather than in their variety. Ankylostomes occurred in 56 per cent., whipworms in 50 per cent., roundworms in 25 per cent., although a recently landed contingent had 75 per cent. Strongyloides was rare and came chiefly from Tamatave. Three cases of Dibothriocephalus were noted. Residence in France resulted in marked reduction of parasitism, the percentage falling from 85 per cent. in the case of recent arrivals to 45 per cent. in those of longer residence.

R. T. L.

KOBAYASHI (Harujiro). **On the Animal Parasites in Chosen (Korea). Second Report.**—*Acta Med. in Keijo.* 1928. Vol. 11. No. 2. pp. 109–124. [40 refs.] [Med. Faculty, Keijo Imperial Univ., Keijo, Japan.]

In this paper the author tabulates the statistical findings of previous observers for the various helminth ova in man in Chosen [Korea]. On Paragonimiasis he remarks that patients occur in all provinces of Chosen except North Kankyo-Do. Five out of the 12 species of *Melania* which occur in Chosen are intermediaries. These are: *M. libertina, M. extensa, M. paucicincta, M. gotschei* and *M. nodiperda.* Three crustacea are known to be second intermediary hosts, *Eriocheir sinensis, Cambaroides similis* and *C. dauricus.* The capture of these crabs and crayfish is now prohibited. The collection of snails in certain regions reduced their numbers to about one-third and the infestation of the crabs then ceased. *Clonorchis sinensis* prevails in southern Chosen. The *Bulimus* (*Bithynia*) *striatulus* usually inhabits swamps and ditches, but its occurrence in the river Kinko is mentioned. Anto and Shonei are new endemic foci, while *Parapelecus cigenmanni* and *Sarocheilichthys kobayashii* are recorded as new second intermediate hosts. *Schistosoma japonicum* has been recorded on one occasion only from Chosen. The author considers that it is absent and that MILLS mistook the eggs of *Paragonimus* for those of *Schistosoma.* These were found in an inguinal hernia.

Of tapeworms, *T. saginata* is the most prevalent. *D. latus* is fairly common. *Cysticercus cellulosae* has been reported from pigs in northern Chosen, but no adults have been found by the author, although MUTA has recorded their presence. A fourth case of *Sparganum mansoni* is recorded and a new host has been found in *Erinaceus amurensis koreensis* in which the worm develops to one metre in length.

Both Ancylostoma and Necator occur in man and prevail more in the south than in the north of Chosen. *Trichostrongylus orientalis* is very common. *Filaria bancrofti* occurs and a unique case of *Dracunculus medinensis* has been found in a Chosenese who had never travelled outside Chosen.

R. T. L.

HAKKI (Ismail). Ueber die Verbreitung von Darmparasiten in der Türkei. [**Distribution of Intestinal Parasites in Turkey.**]—*Cent. f. Bakt.* I. Abt. Orig. 1928. Sept. 26. Vol. 108. No. 7/8. pp. 393–394.

As Professor of Parasitology in the Medical Faculty in Constantinople Dr. Hakki has interested himself in the incidence of protozoal and helminth parasites in Turkish children. From an examination of 800 stools he has been able to list the following helminths: Hymenolepis 30 ($3\frac{6}{8}$ per cent.), *Dibothriocephalus latus* 60 ($7\frac{1}{2}$ per cent.), *Ascaris lumbricoides* 150 ($18\frac{3}{4}$ per cent.), *Oxyuris vermicularis* 180 ($22\frac{1}{2}$ per cent.), *Necator americanus* 25 ($3\frac{1}{8}$ per cent.), *Ancylostoma duodenale* 5 ($\frac{5}{8}$ per cent.), *Trichuris trichiura* 170 ($21\frac{1}{4}$ per cent.). He remarks that he has also seen on several occasions specimens of *Taenia saginata* and rarely of *T. solium*.

R. T. L.

DE RIVAS (Damaso) & FIFE (Charles A.). **Intestinal Parasitism in Philadelphia.**—*Jl. Amer. Med. Assoc.* 1929. Feb. 23. Vol. 92. No. 8. pp. 624–627. [1 ref.] [Dept. of Parasit., Univ., Pennsylvania.]

Of 275 adult patients in the Polyclinic Hospital, Philadelphia, 2 were found with *Dibothriocephalus latus* and 2 with *Trichuris trichiura*. Of 237 children from the General and Presbyterian Hospitals and the Mary Drexal Home 3 harboured Trichuris, 1 *Hymenolepis nana*, 1 Ascaris. [The protozoal infections are not dealt with in this abstract.]

R. T. L.

NAGAYO (M.). **A Review of Some Recent Studies conducted in Japan on Parasitic Diseases.**—*Scientific Reports Govt. Inst. Infect. Dis.* Tokyo. 1927. Vol. 6. pp. 503–509.

Owing to its geographical situation Japan is rich in parasitic infections, for its territory extends from arctic to subtropical zones. Parasitic diseases play an important part in medicine and hygiene and their elucidation has been the subject of numerous researches by Japanese

workers. The author briefly reviews their contributions to new knowledge of nematodes, trematodes and cestodes, and their influence on the later elucidation of allied problems in other parts of the world.

R. T. L.

FUJINAMI (Akira). Uma viagem de investigação medica ao Brasil. [**Investigations during a Visit to Brazil.**]—*Sciencia Med.* 1928. Oct. Vol. 6. No. 10. pp. 483–490.

Professor FUJINAMI and his assistant visited Brazil from Japan, taking a sort of " busman's holiday," and spending the time in examining the faeces of nearly 700 Japanese immigrants on board before disembarkation and continuing his investigations in company with Professor CHAGAS and Dr. da FONESCA of the Oswaldo Cruz Institute after landing. His investigations were nearly all helminthological. He found 63·9 per cent. of the total infected with hookworm (Ancylostoma and Necator), whereas among those on board only 22·7 per cent. were detected. *Ascaris lumbricoides* and *Trichuris trichiura* were present, sometimes in large numbers. He also met with *Oxyuris vermicularis, Strongyloides intestinalis* [figures not given], *Trichostrongylus orientalis* (2·1 per cent.), *Metagonimus yokogawai* (0·6 per cent.), and *Clonorchis sinensis* (1·1 per cent.). Neither Paragonimus nor *Schistosoma japonicum* was discovered. A few were harbouring *Taenia solium, Hymenolepis nana* and *H. diminuta*, but none of the Japanese immigrants showed indication of infection by *Sch. mansoni*, though this is rife in some of the Brazilian estates. No Japanese children under one year, born in Brazil, were found infected with any worms.

Apart from the above, the immigrants suffered severely from malaria and many presented lesions of American leishmaniasis and they were attacked equally with the indigenous races by Chagas's disease, blastomycosis coccidioides, and amoebic dysentery.

H. Harold Scott.

FELDT (A. M.). Influence des invasions vermineuse sur sécrétions du pancréas. [**Influence of Helminth Infestation on Pancreatic Secretion.**]—*Russian Jl. Trop. Med.* 1928. Vol. 6. No. 7. pp. 419–427. [In Russian. French summary p. 427.]

From a study of 18 cases of infection with helminths (including 10 *Taenia saginata*, 3 *Fasciola hepatica*, 1 *Taenia solium*, 1 *Oxyuris vermicularis*, 1 *Trichuris trichiura*, and 1 *Dibothriocephalus latus*) the author concludes that the secretory activity of the pancreas was not markedly affected.

R. T. L.

PEVERELLI (P.). Het zoeken naar Wormeieren met behulp van Cederoliepreparaten. [**Search for Worm Eggs by Means of Cedar Oil.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 7. pp. 992–995. [Med. Lab., Weltevreden.]

With the technic described by HEIN (see this *Bulletin*, Vol. 24, p. 978) the author examined 105 samples of faeces, 7 of which contained

no parasitic ova. In the other samples were eggs of Trichocephalus, Ascaris, Ancylostoma and Clonorchis. The same samples were examined with the eosin method and the comparative results as regards the time which elapsed before the first egg was found and the number of ova detected are given in tabular form. The cedar-oil method in approximately 90 per cent. of the cases gave better results than the eosin test. The eggs, especially those of Ancylostoma, are apt to undergo some alterations in the smears covered with cedar-oil ; therefore the smears ought to be examined within half an hour of their preparation.

W. J. Bais.

Fischer (Walther). Ein unbekannter Parasit der Leber. [**An Unidentified Liver Parasite.**]—*Virchows Arch. f. Path. Anat.* 1928. July 28. Vol. 269. No. 1. pp. 162–165. With 3 text figs. [Path. Inst., Univ., Rostock.]

The pathological reactions surrounding pieces of parasite with cuticular surface are illustrated and described, but the zoological position of parasite cannot be determined.

R. T. L.

Shirai (Mitsuji). **The Biological Observation on the Cysts of** *Fasciola hepatica* **and the Route of Migration of Young Worms in the Final Host.**—*Scientific Reports Govt. Inst. Infect. Dis.* Tokyo. 1927. Vol. 6. pp. 511–523. [7 refs.]

Laboratory studies upon the cercariae of *Fasciola hepatica* reveal some interesting and important facts. The cercariae on emerging from the snail are not infective before encystment and for a period of about 12 hours after encystment. The cyst can be kept alive for 80 days in fresh water at 22°–31° C. If dried in the shade at 25°–32° C. for 72 hours they ceased to be infective. In direct sunlight they survived drying for 3 hours at 35° C. or at 26° C. for 24 hours in the shade. Even if heated in water to 37° C. for 12 hours or 40° C. for 2 hours the cysts remained infective, but kept at 45° C. for 30 minutes or 50° C. they were killed. In water at −21° C. the cysts perished within 10 minutes. But if kept in water at 0° C. for 24 hours but not frozen they remained infective. In various chemicals their resistance somewhat resembled that of Paragonimus cysts, e.g., they survive in 50 per cent. alcohol for 2 hours, in 0·8 per cent. formalin water solution for 24 hours and in 3 per cent. saline water for 24 hours.

Experiments confirm the previously observed facts that the cercariae do not migrate into the liver by the bile duct, but enter by way of the abdominal cavity. In laboratory animals the flukes do not enter the bile ducts, but wander in the liver parenchyme even after reaching maturity.

R. T. L.

Patterson (S. W.). **A Case of Human Infestation with Liver Fluke.**—*Lancet.* 1928. Dec. 22. pp. 1291–1292. [9 refs.]

This case of human infection with *Fasciola hepatica* showed an eosinophilia of 42 to 62 per cent. There was fever, irritating spasmodic cough,

abdominal discomfort and severe colic at times. Treatment was by non-surgical biliary drainage with drachm doses of 50 per cent. magnesium sulphate twice weekly on an empty stomach, with increasing doses of hexamine with bicarbonate of soda and intravenous injections of stibosan. The abdominal symptoms disappeared, the total leucocytes fell from 18,000 per cmm. to 8,000, the eosinophiles from 62 to 4 per cent., and the ova were found in the stools only on concentrating. The patient is now well.

R. T. L.

Chester (W. L.). *Fasciola hepatica* : **a Fatal Case in a European Soldier.** —*Jl. Roy. Army Med. Corps.* 1928. Dec. Vol. 51. No. 6. p. 463.

An abstract is given from an old P.M. report of a case of fluke infestation in a 21-year-old soldier of the Dorset Regiment who had been stationed in Egypt in 1886. Over a dozen liver flukes were found in the bile ducts, which were dilated with thickened walls. The largest fluke measured 1 inch by $\frac{1}{4}$ inch. It was flat, oval, rather pointed at the head, blunt and rounded posteriorly. At the tip of the head was a small orifice and about one-eighth of an inch from this in the middle line an elevated orifice which "appeared to contain a red clot of blood." [The case is diagnosed as *Fasciola hepatica*, but is more probably *Fasciola aegyptiaca* = *F. angusta*.]

R. T. L.

Butler (J. Bayley) & Buckley (J. J. C.). *Catenaria anguillulae* **as a Parasite of the Ova of** *Fasciola hepatica.*—*Scient. Proc. Roy. Dublin Soc.* 1928. Jan. Vol. 18. N.S. Nos. 43–47. pp. 497–513. With 45 figs. on 4 plates. [8 refs.]

Ova of *Fasciola hepatica* are attacked by a Chytridiacean parasite, *Catenaria anguillulae*. The fungus is described and "the possibility of using it as a means of checking the infection of snails by miracidia is suggested," for an infection of the egg destroys the miracidium.

R. T. L.

Pigulewsky (S. W.). Zwei Fälle von *Fasciola gigantica* Cob. beim Menschen in Russland. [**Two Cases of** *F. gigantica* **Infestation in Man in Russia.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Oct. Vol. 32. No. 10. pp. 511–512. With 2 figs. [7 refs.] [Helminth. Lab., Trop. Dis. Station, Tashkent.]

In inhabitants of Tashkent nine cases of *Fasciola*, of which two are diagnosed as *Fasciola gigantica*, were found during a systematic microscopical examination of stools. The eggs measured in one case 0·160–0·195 mm. by 0·07–0·095 mm.; in the second case 0·155–0·19 by 0·075–0·09 mm. This species has, according to the author, been recorded previously from man by Gouvea in Rio de Janeiro, 1865.

R. T. L.

TUBANGUI (Marcos A.). **Larval Trematodes from Philippine Snails.**—*Philippine Jl. Sci.* 1928. May. Vol. 36. No. 1. pp. 37–54. With 5 plates. [4 refs.] [College of Vet. Sci., Univ. of the Philippines, Los Baños.]

——. **Trematode Parasites of Philippine Vertebrates.**—*Ibid.* July. No. 3. pp. 351–371. With 5 plates. [17 refs.] [Univ. of the Philippines, Los Baños.]

The second paper deals with trematode parasites of representative Philippine vertebrate hosts other than man and domesticated animals, and the first paper describes for the first time the trematode larvae which occur in certain widespread freshwater snails, viz. : *Melania* sp., *M. asperata philippinensis* and *Ampularia lagunaensis*. No cercaria occurred in *Vivipara angularis*. Nine different larval flukes were discovered and are given new names.

R. T. L.

OCHI (Shigeru). [**A Contribution to the Study of the Trematodes, which infest the Fresh Water Fishes as their Intermediate Host. On a Species of Encysted Larvae found in** *Leuciscus hakonensis*.]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1928. Sept. No. 2588. [Summarized in *Japan Med. World*. 1928. Dec. 15. Vol. 8. No. 12. p. 326.]

Encysted cercariae of *Metagonimus yokogawai* occur in *Leuciscus hakonensis*, a fresh water fish commonly known in Japan as "Ugui." The adult worms were experimentally reared in puppies and albino rats.

R. T. L.

HIRASAWA (Ichizo). **On** *Echinochasmus perfoliatus* **found Parasitic in Man and on the Final Host of this Parasite.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1928. June. No. 2577. [Summarized in *Japan Med. World*. 1928. Oct. 15. Vol. 8. No. 10. p. 275.]

A natural infection of man with the small fluke *Echinochasmus perfoliatus* is recorded. It also occurred as a natural infection in a water bird named "goisagi."

R. T. L.

BLACKMORE (H. S.). **Preliminary Note on the Sterilization of Bilharzia-Infected Water.**—*Jl. Roy. Army Med. Corps.* 1928. Oct. Vol 51. No. 4. pp. 262–264.

Chloramine has proved so successful in sterilizing drinking water that it has been tested as a method of purifying bilharzia-infected waters. *Planorbis boissyi* were collected which discharged cercariae resembling morphologically those described as schistosome cercariae. Exposure to a dilution corresponding to one part per million of available chlorine caused immediately greatly increased activity followed by complete cessation within about five minutes. These results were controlled by the use of bleach solution as controlled by the use of Horrocks' apparatus. The cercariae all died within twenty minutes, loss of mobility being taken as evidence of death. A third experiment was designed which again showed the extreme susceptibility of cercariae to free chlorine. The cercariae were dead in under five minutes and had been killed by less than the proportion of chlorine which would be employed for disinfection in the ordinary way.

R. T. L.

Brumpt (E.). Réalisation expérimentale du cycle complet du *Schistosoma haematobium.* [**Experimental Production of Complete Cycle of** *S. haematobium.*]—*Ann. Parasit. Humaine et Comparée.* 1928. Oct. 1. Vol. 6. No. 4. pp. 440–446. With 3 figs. [13 refs.] [Parasit. Lab., Faculty of Med., Paris.]

The hedgehog has been shown by Brumpt to be very readily infected, under experimental conditions, with *Schistosoma haematobium.* Although in human cases the infection is usually vesical, in the three experimental infections of the hedgehog the bladder remained free, although there was a generalized invasion of the bowel wall and eggs were present also in the liver and pancreas. Attempts to infect 5 cats and 7 rabbits gave negative results.

R. T. L.

Cawston (F. G.). **Bilharzia Infection in South Africa.**—*Parasitology.* 1928. Oct. Vol. 20. No. 3. pp. 250–253. With 1 map in text. [4 refs.]

Cawston notes that natural collections of water of South African vleis (swamps) are usually entirely free from Bilharzia infection. This disease is incurred through bathing in stagnant pools in which *Physopsis africana* abound along certain rivers and in pools in brickfields. Bilharziasis is rare in the highlands of Natal, but examples of the carrier *P. africana* and cases of infection have been recorded from 4,050 feet above sea-level on a tributary of the Little Crocodile River.

R. T. L.

Cawston (F. G.). **Bilharzia Disease and Bird Protection. The Destruction of Molluscan Disease Carriers.**—*Jl. Trop. Med. & Hyg.* 1928. Oct. 15. Vol. 31. No. 20. pp. 261–262. [2 refs.]

Taken as a whole, the presence of birds in a district has little or no control on the number of fresh-water snails according to Cawston; the use of the domesticated duck is, however, undoubtedly most commendable.

R. T. L.

Orenstein (A. J.). **Plasmochin and Antimosan in the Treatment of Malaria and Schistosomiasis.**—*Jl. Med. Assoc. South Africa.* 1928. Dec. 22. Vol. 2. No. 24. pp. 661–662.

Two cases of bilharziasis have been treated, apparently successfully, with antimosan, a complex organic trivalent antimony compound which can be used intravenously or less preferably intramuscularly. In the first case tartar emetic had been given with severe clinical reactions. In the second case there was also an infection with *Entamoeba histolytica,* which was simultaneously treated with yatren. The author speaks more confidently about the non-toxicity of antimosan than of its efficacy.

R. T. L.

CAWSTON (F. G.). **The Non-Toxic Treatment of Bilharzia Disease.**—*Jl Trop. Med. & Hyg.* 1929. Feb. 15. Vol. 32. No. 4. p. 47.

One infers that antimosan is regarded as a non-toxic treatment for bilharzia disease. A case is recorded in which the drug was given. The progress was decidedly slower than would have been expected with tartar emetic, and as ova were found in the urine on the 24th and 36th days it was thought advisable to give one or two injections of tartar emetic to prevent recurrence of his symptoms. Antimosan has the advantage that it may be injected subcutaneously.

R. T. L.

CAWSTON (F. G.). **Carbon Tetrachloride in Schistosomiasis.**—*China Med. Jl.* 1928. Sept. Vol. 42. No. 9. pp. 700–701.

In a patient under repeated doses of carbon tetrachloride a degeneration of bilharzia ova, similar to that following antimony or emetine treatment, has been noted. The changes occur after three days. There is a corresponding lessening of blood in the urine. The more extensive use of this drug in schistosomiasis is suggested. An editorial footnote advocates caution, as the method of administration of the drug is far from being a safe one and as the schistosomes of the Far East differ from those of Africa. [For Dr. Cawston's later experience see the succeeding abstract.]

R. T. L.

CAWSTON (F. G.). **Carbon Tetrachloride in Schistosomiasis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Nov. 25. Vol. 22. No. 3. pp. 245–248. [4 refs.]

One gram of necatorine or 3 cc. of the commercial carbon tetrachloride given to a patient with *Schistosoma haematobium* produced very extensive degeneration in the ova in the urine much earlier than is customary either with tartar emetic or emetine. Attempts were made, therefore, to cure cases by repeated doses of carbon tetrachloride, but daily administration gradually produced toxic symptoms while cessation of the treatment resulted in the passage of normal ova. The use of carbon tetrachloride is not contraindicated during a course of antimony treatment. The author concludes, " Although the gradual destruction of schistosomes by intravenous antimony is the method of choice, the immediate appearance of signs of degeneration of the adult worms after one or more doses of carbon tetrachloride raises the hope that massive doses, given at intervals sufficiently large to enable the system to recover completely from the effects of one or more doses before more are given, may be equally effective in producing a cure of certain cases of the disease."

R. T. L.

CAMERON (T. W. M.). **A New Definitive Host for** *Schistosoma mansoni.* —*Jl. Helminthology.* 1928. Dec. Vol. 6. No. 4. pp. 219–222. With 1 sketch map.

On a recent visit to the West Indies the author made the important discovery that in St. Kitts the local monkeys, of African origin, are naturally infected with *Schistosoma mansoni.* This introduces an unexpected factor in prophylaxis.

R. T. L.

MONCAREY. **A Note on Bilharzia Disease.**—*Kenya & East African Med. Jl.* 1928. Nov. Vol. 5. No. 8. pp. 281–282.

The Kilo-Moto Mines, of which the author is Principal Medical Officer, are situated in the north-east part of the Belgian Congo between East Africa and the Sudan. More than 9 per cent. of the labourers harbour *Schistosoma mansoni* and the whole country around appears to be infected. Dysentery is common but the symptoms are very rarely serious.

R. T. L.

LAMBERT (Robert A.). **Some Observations on the Pathology of Schistosomiasis** (*S. mansoni*) **in Man and Experimental Animals.**—*Bol. Asoc. Med. de Puerto Rico.* 1928. Oct. Vol. 21. No. 166. pp. 15–20.

The large majority of infected individuals do not exhibit an early toxic stage in *S. mansoni* infection. The presence of eggs in the intestinal wall or in the liver is the cause, in the author's opinion, of most, if not of all, of the tissue changes, exciting " a chronic productive inflammatory reaction characterized by giant cell formation, endothelial cell accumulation, eosinophilic and mononuclear infiltration, and an active fibroblastic proliferation." The mechanical irritation of the mere presence of ova over a long period is sufficient to explain the cases of marked cirrhosis occasionally seen. The adult worms seem to induce little or no reaction in the blood-vessel wall or the perivascular tissues. Two cases illustrate the end result of infection as seen in Porto Rico. Fortunately the infection is usually a light one in that island.

R. T. L.

TALIAFERRO (William H.), HOFFMAN (William A.) & COOK (Donald H.). **A Precipitin Test in Intestinal Schistosomiasis** (*S. mansoni*). —*Jl. Preventive Med.* 1928. Sept. Vol. 2. No. 5. pp. 395–414. [30 refs.] [School of Trop. Med., Univ., Porto Rico.]

A simple precipitin test for infections with *Schistosoma mansoni* has been sought for. Aqueous extracts of dried livers of infected *Planorbis guadeloupensis*, collected in Porto Rico, were made with Coca's slightly alkaline solution or with saline or phenol and were found to yield specific test antigens. The active principle in these extracts is precipitated with the albumen fraction. Certain advantages accrued, however, when antigens were prepared by a thorough extraction of dried cercarial powder in a Soxhlet apparatus with ether, absolute alcohol or both, followed by the extraction of the lipoid-free residue with Coca's solution (containing 0·05 per cent. $NaHCO_3$) and the use of the clear supernatant. The authors note that schistosome cercariae can be separated from snail liver tissue, in macerated fresh infected livers, by centrifugation. Aqueous extracts prepared from the lipoid-free powder of these concentrated larvae are potent antigens and, so far as preliminary experiments go, they do not give rise to pseudo-positives with syphilitic sera. Antigens prepared from lipoid-free powders of normal snail livers give uniformly negative reactions with schistosome sera.

R. T. L.

TALIAFERRO (William H.), HOFFMAN (William A.) & COOK (Donald H.). **A Precipitin Test in Intestinal Schistosomiasis** (*S. mansoni*).—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Sept. Vol. 4. No. 3. pp. 117–119. [School of Trop. Med., Univ., Porto Rico.]

Four different methods were tested for the preparation of a specific antigen for the diagnosis of *Schistosoma mansoni* infections. The most satisfactory was a concentration of schistosome larvae obtained by centrifugation of macerated infected snail livers. The larvae are ground and then extracted with ether or absolute alcohol and the lipoid-free residue is subsequently extracted with Coca's solution containing 0·05 per cent. $NaHCO_3$. The clear supernatant fluid is used as the antigen. With this pseudopositives with syphilitic sera were not encountered.

R. T. L.

MIYAJI (S.) & IMAI (B.). Serologische Studien bei Schistomiasis japonica. [**Serological Studies with** *Schistosoma japonicum.*]—*Cent. f. Bakt.* I. Abt. Orig. 1928. Vol. 106. pp. 237–246. With 3 charts in text. [5 refs.] [Bact. Inst., Med. Faculty, Niigata, Japan.]

These authors injected rabbits with an emulsion of schistosomes and were able to show that such injection stimulated the production of complement fixing bodies and precipitins for schistosomes in the sera of the experimental animals. Infection of rabbits and dogs with schistosome cercariae also produced these reactions. The *in vitro* studies were more satisfactory when saline extracts were used as antigens, as alcoholic extracts sometimes gave a reaction with Wassermann positive sera. The sera of apparently healthy persons living in an area where schistosomiasis is endemic, but in whose faeces schistosome eggs were not found, often gave a positive reaction. They also showed that when rabbits which had previously been injected with an emulsion of *Bact. typhosum* were infected with schistosome emulsion or cercariae, the agglutination titre for *Bact. typhosum* tended to rise again.

R. Lovell.

IMAI (Bunji). [**A Contribution to the Serological Reaction of** *Schistosomiasis japonicus.*]—*Iji-Shimbun* (*Med. News*). 1928. June. No. 1236. [Summarized in *Japan Med. World.* 1928. Oct. 15. Vol. 8. No. 10. p. 273.]

Phenolized saline extracts of *Schistosoma japonicum* adults "gave about 100 per cent. positive complement fixation reaction with infected persons' sera which had been proved to be almost reliable as the specific reaction. The precipitation reaction occurred in about 50 per cent." Alcohol extracts of the adults and of the intermediate hosts were also tested [but the English summary does not indicate the outcome].

R. T. L.

TODOKORO (K.). **History of Japanese Schistosomiasis (Katayama Disease) and its Prevention in Hiroshima Prefecture.**—*Jl. Pub. Health Assoc. Japan.* 1928. Sept. Vol. 4. No. 9. pp. 1–9.

A brief account is given of the history of schistosomiasis in the Hiroshima prefecture and of the activities of the work of he Association for the suppression of local diseases. Its principal activities were

concerned with the extermination of intermediate hosts, the installation of pit latrines and the replacement of horses for cattle in ploughing. Wild rats were repressed and the inhabitants were warned against skin infection from immersion in water. As a result "kabure" due to skin invasion has decreased. There has been a marked drop in the infection of cattle and in the numbers of the intermediate host. Very few of the inhabitants are infected with hookworms or roundworms, and it is suggested that possibly the use of lime against the intermediate hosts of the schistosome has also effectively destroyed the eggs of these parasites.

R. T. L.

Ozawa (Makoto). **Clinical, Histological and Statistical Observations on *Schistosomiasis japonica* as a Cause of Acute Appendicitis.**—*Japan. Jl. Experim. Med.* 1928. Nov. 10. Vol. 7. No. 1. pp. 95–99. [15 refs.]

Between 1923 and 1927 the author studied 54 appendices obtained from patients in the Yamanashi prefecture of Japan, where *S. japonicum* infection is very prevalent. 42 cases, upon which the author operated, were diagnosed clinically as acute or chronic appendicitis and in 20 of these cases eggs of *S. japonicum* were found in the wall of the vermiform process. In another group of 12 cases which had not had appendicitis the author removed the appendix "prophylactically" and in 7 of these eggs of *S. japonicum* were also found on histological examination. While *S. japonicum* cannot be said to induce acute appendicitis by itself, the special histological changes associated with the presence of the eggs induces an increased invasion of bacteria and leads to secondary infection resulting in the possible occurrence of an acute appendicitis. Where *S. japonicum* is endemic appendicitis is much more prevalent than in the non-endemic regions of Japan.

R. T. L.

Liu (H. L.). **A Case of *Schistosomiasis japonica* complicated with Amoebic Dysentery.**—*Nat. Med. Jl. China.* 1929. Feb. Vol. 15. No. 1. pp. 47–48.

A case of *S. japonicum* infestation is recorded as the first to occur in the Luchowfu Christian Hospital, Hofei, Anhwei. A course of emetine caused the amoeba and cysts to disappear from the stools in four days. The schistosoma ova persisted, but these disappeared on the 18th day after tartar emetic treatment was instituted.

R. T. L.

Ward (H. B.). **Studies on the Broad Fish Tapeworm in Minnesota.**—*Jl. Amer. Med. Assoc.* 1929. Feb. 2. Vol. 92. No. 5. pp. 389–390. [6 refs.]

Nine species of fish taken from five different lakes in the north-eastern part of the State of Minnesota were examined for larval stages of *D. latus*. In three species only were larvae found, viz., in *Esox lucius*, *Stizostedion vitreum* and *Perca flavescens*. These occurred in Burntside Lake, Fall Lake and Long Lake. Dogs were readily infected, but young

kittens and full-grown cats and guineapigs proved resistant. The form recorded by HALL and WIGDOR as *D. americanus*, found in the dog in Detroit, may only be a juvenile form of *D. latus* as with *D. minor*. Ward's own records show that *D. latus* infests freshwater fish from New England to Alaska, but the records are too scanty and too scattered to give any idea of the real frequency of their occurrence.

R. T. L.

WARTHIN (Aldred Scott). **Increasing Human Incidence of Broad Tapeworm Infestation in Great Lakes Region.**—*Jl. Amer. Med. Assoc.* 1928. June 30. Vol. 90. No. 26. pp. 2080–2082. [4 refs.]

During the last five years the great majority of persons with *D. latus* who have been examined by the Pathological Laboratory of the University of Michigan have come from the southern part of the State, particularly from Detroit, and have been Jews. These patients were all fish-eaters, most of them stating that they preferred uncooked fish. These cases have all presented clinically a more or less severe anaemia, usually a secondary anaemia, but in a few cases suggesting strongly a pernicious anaemia. In the majority of cases the patients had live worms. Two cases are cited in detail.

R. T. L.

VERGEER (Teunis). **New Sources of Broad Tapeworm Infestations: Report of Fourteenth Native Case.**—*Jl. Amer. Med. Assoc.* 1928. Aug. 11. Vol. 91. No. 6. pp. 396–397. [2 refs.] [Dept. Zool., Univ., Michigan.]

Three new cases of human infestation with *Dibothriocephalus latus* have recently come under the author's notice in Michigan, making a total of 14 known native cases. Of these 6 were of Jewish parentage; 13 of the patients were under 11 years of age. Since the author's report of plerocercoids in fish from Lake Winnipeg they have also been found in fish from most of the commercially important Canadian lakes.

R. T. L.

VERGEER (Teunis). **Dissemination of the Broad Tapeworm by Wild Carnivora.**—*Canadian Med. Assoc. Jl.* 1928. Dec. Vol. 19. No. 6. pp. 692–694. [12 refs.] [Dept. Zool., Univ. of Michigan, Ann Arbor, Mich.]

In the northern lake regions of Alberta, Manitoba and Ontario the dog is an important reservoir of *D. latus* in man. The fox, cat, wolf, coyote and lynx are also capable of serving as hosts. Bears are common in the infested territories and catch and eat fish during the spawning seasons. Two bears were successfully infected experimentally. As wild carnivores are natural reservoirs, the infestation of fish cannot be completely controlled by man.

R. T. L.

VERGEER (Teunis). **The Broad Tapeworm in America with Suggestions for its Control.**—*Jl. Infect. Dis.* 1929. Jan. Vol. 44. No. 1. pp. 1–11. With 1 text fig. & 17 figs. on 2 plates. [36 refs.] [Dept. of Zool., Univ. of Michigan, Ann Arbor, Michigan.]

Owing to the difficulty of distinguishing the plerocercoid larvae of Pseudophyllidean cestodes the author stresses the importance of feeding experiments as a means of identification. He does not accept NICHOLSON's statement that perch and trout are sources of infection in America, as he has found no evidence in its support. Plerocercoids are most often found in the flesh. They appear to grow larger in *Stizostedion* than in *Esox*. Segmentation is absent in the plerocercoid. Several other species of larval tapeworm also occur in the flesh. Those of the genus *Proteocephalus* are distinguished by their four, or five, cup-shaped suckers. Plerocercoids of *Dibothrium cordiceps* in the flesh of trout closely resemble the larvae of *D. latus*. In shipments from every important Canadian lake the author has found fish containing the larvae of *D. latus*. These lakes supply nearly 80 per cent. of the total consumption of *Stizostedion vitreum* in the United States and this export constitutes 85 per cent. of the total Canadian catch. The legal exclusion of Canadian fish from the United States would in the author's opinion reduce the tapeworm menace by at least 80 per cent., but an important industry would be ruined. Only about 200 cases have so far been reported in the United States. Prophylactic measures comprise publicity, sewage control and treatment of infected persons. It is recognized that dogs, foxes, otters, bears and cats may serve as natural carriers.

R. T. L.

VERGEER (Teunis). **The Dog as a Reservoir of the Broad Tapeworm.** —*Jl. Amer. Med. Assoc.* 1929. Feb. 23. Vol. 92. No. 8. pp. 607–608. [6 refs.] [Zool. Lab., Univ., Michigan.]

Nearly 80 per cent. of the fishes *Stizostedeon vitreum* and of the great northern pike *Esox lucius* which are consumed in the United States are imported from the large lakes of Ontario, Manitoba and Alberta. Lake Nipigon in Ontario is especially heavily infected. The worms have been introduced from Europe originally by infested Scandinavian, Finnish and Russian immigrants engaged on lumbering. The fish have become infected and have then infected the dogs; especially those in the Indian reservations.

R. T. L.

LEIPER (R. T.). **A Cryptic Infection with** *Dibothriocephalus latus*.— *Jl. Helminthology*. 1928. Dec. Vol. 6. No. 4. pp. 223–226. With 1 text fig.

The later history is given of a case of experimental infection of man recorded by Miss LE BAS in 1924. No anaemia has resulted from an infection with *D. latus* extending over a period of five years, while the blood picture has reverted to normal [see this *Bulletin*, Vol. 22, p. 475].

R. T. L.

Magath (Thomas B.). **Experimental Studies on *Diphyllobothrium latum*.**—*Amer. Jl. Trop. Med.* 1929. Jan. Vol. 9. No. 1. pp. 17–48. With 23 figs. [37 refs.] [Mayo Clinic, Rochester, Minnesota.]

Many foreign proteins and lipoids will induce anaemia experimentally in certain animals, and there is little reason to suppose from the results of injection of extracts of *D. latus* that more than secondary anaemia is induced. Certainly the typical picture of pernicious anaemia is not produced. Extract of ascaris will similarly induce a secondary anaemia but ascariasis and pernicious anaemia occur so rarely together that no direct causal relationship between them can be inferred. The author concludes from a critical analysis that it is by no means clear that the association of a severe grade of anaemia with Dibothriocephalus infestation is one of cause and effect. Records of the feeding of larvae from North American fishes to dogs are tabulated. The author is of opinion that *D. parvus*, Stephens, is identical with young adult *D. latus* collected before any segments have sloughed off. Wall-eyed pike from Lake Winnipeg have a high percentage of infestation. It is interesting to note that Finnish families did not appear in Winnipeg until within the last half decade or decades. Jews first appeared in numbers in 1880 and came from Russia. Since Jewish women in the regions of Russia and Romania from which Jews have migrated to Winnipeg so commonly harbour *D. latus*, it is quite likely that they have formed the present endemic region. The control of the infestation is of considerable concern, and the author has recommended that it should be notifiable and that a survey of the lakes in Minnesota should be made to determine the degree of infestation in fish, that raw sewage should not be passed into the lakes, and that publicity should teach people to cook fish well before consuming it.

R. T. L.

Faust (E. C.). **Infection Experiments in Man and other Mammalian Hosts with Sparganum Stage of Oriental Diphyllobothrids.**—*Proc. Soc. Experim. Biol. & Med.* 1928. Dec. Vol. 26. No. 3. pp. 252–254. [2 refs.] [College of Med., Tulane Univ., Louisiana.]

A series of experiments with spargana collected in China shows that these larvae, hitherto regarded as belonging to *Sparganum mansoni*, really belong to several distinct species. The cat, dog and their wild relatives are the natural hosts of the adult worms, and except with *D. houghtoni*, a new species, man is not subject to infection with the adult. Evidence, not yet conclusive, favours the view that the application of frogs to inflamed and ulcerated parts of the body is the source of sparganosis in man.

R. T. L.

Li (Chi-Hsieh) & Faust (E. C.). **Infection of Cyclops with Coracidium of Oriental Diphyllobothrids and their Development to Mature Procercoid Stage.**—*Proc. Soc. Experim. Biol. & Med.* 1928. Dec. Vol. 26. No. 3. pp. 250–251. [2 refs.] [Peking Union Med. College, Peking, & College of Med., Tulane Univ., Louisiana.]

Eight species of Cyclops obtained in considerable numbers in the neighbourhood of Peking were all found to be susceptible to infection

with the coracidia, or ciliated hexacanth embryos of *Dibothriocephalus* 25 minutes or longer were occupied by the onchospheres in excavating their way through the gut wall of the Cyclops after ingestion. Certain small species of Cyclops harboured larger numbers of mature procercoids than the larger forms.

R. T. L.

Richter (Oscar), Maurer (Siegfried) & Eyl (Mary). **Treatment of Severe *Dibothriocephalus latus* Anemia, with a High Caloric Diet, Rich in Liver Extract and Vitamins.**—*Jl. Amer. Med. Assoc.* 1928. Nov. 10. Vol. 91. No. 19. pp. 1462–1463. With 1 text fig. [5 refs.] [Otho S. A. Sprague Memorial Inst. & Dept. of Path., Univ., Chicago & Cook County Hosp., Chicago.]

An interesting feature of this case of successful treatment of *Dibothriocephalus* anaemia with a high caloric diet rich in liver extract and vitamins was the fact that the moribund condition of the patient, a young Finnish woman aged 24, when first seen, contraindicated anthelmintic treatment. Such treatment was instituted with success after dietetic management had resulted in improvement of her condition.

R. T. L.

Isaacs (Raphael), Sturgis (Cyrus C.) & Smith (Millard). **Tapeworm Anemia. Therapeutic Observations.**—*Arch. Intern. Med.* 1928. Sept. Vol. 42. No. 3. pp. 313–321. With 3 figs. [12 refs.] [Thomas Henry Simpson Memorial Inst. for Med. Research, Univ. of Michigan, Ann Arbor, Mich.]

As Minot and Murphy have shown that the blood of patients with pernicious anaemia could be restored to normal when half a pound of liver was eaten daily, this regime was tried on a patient having a marked anaemia and a *Dibothriocephalus latus* infection. The symptoms disappeared, even though the parasite was not removed. No evidence of the presence of soluble toxins was obtained by the application of intradermal tests with saline suspensions of the tapeworm.

R. T. L.

Miller, Jr. (Harry M.) & Dawley (Charlotte W.). **An Experimental Study of some Effects of *Cysticercus fasciolaris* Rud. on the White Rat.**—*Jl. Parasit.* 1928. Dec. Vol. 15. No. 2. pp. 87–103. With 4 text figs. & 3 figs. on 1 plate. [15 refs.]

Experimental infections of white rats with *Cysticercus fasciolaris* show that even in the extremely heavy infestations the chief effect seems to be a mechanical one, the enormously distended liver pressing on the viscera and the function of the liver itself being affected by the cysts. Anaphylaxis was never obtained even after repeated puncture of the cysts. The cyst fluid appeared to have no toxicity. The only definite effect was an increase in the eosinophiles, which remained at a high level for about two weeks within a fortnight after infection in light cases. In heavily infested animals the degree of eosinophilia was little more. All the evidence points to the fact that the tapeworm and host are very highly adapted to each other.

R. T. L.

Steinert (Kurt). Zur Serodiagnostik der Echinokokkuskrankheit beim Menschen. [**The Serological Diagnosis of Echinococcal Infection in Man.**]—*Muench. Med. Woch.* 1928. Mar. 2. Vol. 75. No. 9. pp. 389–392. [15 refs.]

Blumenthal (G.). Zur Serodiagnostik der Echinokokkuskrankheit beim Menschen. Bemerkungen zu der gleichnamigen Arbeit von K. Steinert in Nr. 9 d. Wschr.—*Ibid.* Apr. 20. No. 16. p. 697. [" Robert Koch " Inst., Berlin.]

This is a report of the examination for echinococcal infection of the sera of 56 people by means of the complement fixation test. Various antigens from sheep, pigs and horses were used, the most satisfactory appearing to be the fluid and membrane from echinococcal cysts, preserved with phenol. Of the 56 examined, 11 were positive, and of these, echinococcal infection was proved in 6 cases. An operation was not possible in 4, and in the remaining case a *Cysticercus cellulosae* was discovered. This suggested a " Group " reaction, as the complement fixation test had proved positive with an echinococcal antigen. The author concludes that the complement fixation test is a reliable method for the establishment of echinococcal infection.

R. Lovell.

Sachs (H.) & Klopstock (A.). Beiträge zum serologischenVerhalten der Bandwurmlipoide. [**The Serological Behaviour of Tape Worm Lipoids.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1928. Mar. 27. Vol. 55. No. 3-4. pp. 341–357. [4 refs.] [Cancer Research Inst., Heidelberg.]

Complement fixation tests carried out with the serum of experimental rabbits showed that animals injected with a watery extract of tape worms produced lipoid antibodies, thereby confirming the work of Meyer. Rabbits injected with alcoholic extracts alone produced no reaction, but alcoholic extracts with the addition of swine serum produced lipoid antibodies. When *in vitro* experiments were carried out, fixation of complement took place when either watery or alcoholic extracts were used as antigens if the tubes were incubated at 37° C., but fixation took place only with the alcoholic extracts at 0° C.

The serum from animals injected with alcoholic extracts and swine serum not only fixed complement in the presence of alcoholic extracts, but also with extracts of normal animal organs, but not with lecithin, the reaction being thereby similar to a Wassermann reaction. On the other hand, lecithin antiserum with either lecithin, tape worm extracts or certain organ extracts as antigens was able to fix complement.

The serum produced by the injection of watery extracts appears to be specific, and it is concluded that the tape worm body-substance contains not only specific but also undifferentiated lipoid antigens.

R. Lovell.

Botteri (Johann Hugo). Echinokokkenantigen. [**Echinococcus Antigens.**]—*Klin. Woch.* 1929. Apr. 30. Vol. 8. No. 18. pp. 836–839. [11 refs.]

Some of the conflicting results of testing for hydatid infection may be due to the fact that the fluid used as antigen contains several

substances other than the protein constituent, namely, peptone, polypeptides, amino-acids, lipoids and polysaccharides.

When the cutaneous inoculation is made two reactions are set up, an early one showing itself in 5–10 minutes and a late which should be observed after 24 hours. It is the latter only which is to be regarded as specific. A positive early, but negative late reaction has been seen in conditions other than hydatid infection, for example, lupus vulgaris, scrofula, and trichophyton. Albumen-free antigens, whether of human or animal origin, may give rise to sensitizing allergic reactions, but not to symptoms of anaphylaxis. The early response is due to split products thrown out by alcohol and to polypeptides and amino-acids soluble in alcohol which diffuse through the cyst-membrane *in vivo*. The delayed reaction, the specific local oedema, is a true anaphylactic phenomenon, a protein allergy due *in vivo* to damage of the cyst-wall resulting from the age of the parasite. In the complement-fixation reaction it is the lipoid fraction which reacts, analogous to the Wassermann reaction in syphilis; in the cuti-reaction mainly the protein fraction.

H. Harold Scott.

Stuart (Harold C.) & Augustine (Donald L.). *Dipylidium caninum* **Infection in an Infant Six Months of Age. Report of a Case.**—*Amer. Jl. Dis. Children.* 1928. Sept. Vol. 36. No. 3. pp. 523–525. [2 refs.] [Med. School, Harvard Univ., Boston, Mass.]

Segments of *Dipylidium caninum* were passed by an infant 6 months old. As it seemed unlikely that the normal adult dose of an anthelmintic proportioned down for so young an infant could successfully remove the worm, no treatment was given. [It is presumed that the case was a local one in Boston, U.S.A., but the report does not state so.]

R. T. L.

Hoffman (W. H.). **Case of Human Infestation by a Dog Tapeworm.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. July. Vol. 4. No. 1. p. 46. [School of Trop. Med., Univ., Porto Rico.]

Segments of *Dipylidium caninum* occurred in the stools of a male patient of Dr. Jose S. Belaval. No symptoms were attributable to the infection. The case is the first to be recorded for Porto Rico.

R. T. L.

Schafir (M. M.). [**Transduodenal Expulsion of Tapeworm.**]—*Klinicheskaya Meditsina.* Moscow. 1928. June. Vol. 6. p. 634. [Summarized in *Jl. Amer. Med. Assoc.* 1928. Sept. 15. Vol. 91. No. 11. p. 843.]

From the American summary this paper appears to be an account of the use of the duodenal tube as a means of introducing an anthelmintic for the treatment of tapeworm [species not stated]. The worm was usually expelled in two to two and a half hours. An hour and a half after introduction of the anthelmintic irrigation was performed with physiological saline solution unless the worm had been expelled already.

R. T. L.

DE LANGEN (C. D.). Anguillulosis en het ziektebeeld van de "Idiopatische Hypereosinophilie." [**Strongyloidosis and "Idiopathic Hypereosinophilia."**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 7. pp. 973–990. [2 refs.]

In 1923 the author, together with MOH. DJAMIL (see this *Bulletin*, Vol. 21, p. 409) described a peculiar disease which they called "idiopathic hypereosinophilia," the etiology of which they could not indicate and which they considered to be caused by abnormal function of the bone marrow. The same clinical picture has been noticed by others and the author has seen 16 cases since his previous publication. The principal symptoms are : a peculiarly high eosinophilia, slight anaemia, pain and oppression in the upper abdomen, intermittent diarrhoea, slight rises of temperature and pulmonary symptoms of an asthmatic character.

After the author's attention had been drawn to the presence of *Strongyloides stercoralis* in the faeces of his patients, 12 out of the 16 cases mentioned (all with hypereosinophilia of over 40 per cent.) could be examined in this respect and all were found to carry the worm. Another 14 patients suffering from other diseases but also infected with strongyloides showed slight degrees of hypereosinophilia (3–29 per cent.). The clinical symptoms as well as the hyper-eosinophilia subside after the expelling of the worms, which may be attained by means of a combined simultaneous course of intravenous injections of tartar emetic (total dosage per cure never over 2·5 gm.) and of gentian violet administered orally in doses of 100–300 mgm. in powders 3–5 times per day, with some intermissions of a few days in the course of the cure. This cure can be carried out without untoward effects.

W. J. Bais.

YAMADA (Shin-Ichiro). **An Experimental Study on Twenty-four Species of Japanese Mosquitoes regarding their Suitability as Intermediate Hosts for** *Filaria bancrofti* **Cobbold.**—*Scientific Reports Govt. Inst. Infect. Dis.* Tokyo. 1927. Vol. 6. pp. 559–622. With 3 plates. [62 refs.]

Hitherto more than 40 species of mosquitoes have been investigated by various workers, and of these only six have been proved efficient carriers of *Filaria bancrofti*. Partial development has been noted in 19 species. In this paper Yamada records the results of a study of 24 Japanese mosquitoes. He notes that there are seven of these in which complete filarial development occurs. All of these are commonly found in human habitations in Japan. None of the wild species proved suitable intermediate hosts. The paper gives also a useful summary of the developmental phases of *Filaria bancrofti* in the intermediate host. These are well illustrated upon three plates.

R. T. L.

KIRK (J. Balfour). **The Incidence of Filariasis in Port Louis, Mauritius.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Nov. 25. Vol. 22. No. 3. pp. 263–268. [4 refs.]

The resident population of the city and district of Port Louis, the capital of Mauritius, numbers about 54,000, mostly of a humble status in life and of African or Asiatic origin. Of these about 23,000 are

Indians. The climate is equable and warm, showing little seasonal variation. Blood films were taken between August and September, 1927, and examined for filarial embryos. In 658 persons the infection rate was 11·2 per cent. The embryos were those of *Filaria bancrofti*. A table is given setting out the age incidence in groups. None of the children under five years of age was infected. In the older groups the males generally gave a higher infection rate than the females. The author points out that this is contrary to expectation if the transmitting agent is a domestic mosquito. The relation of epitrochlear gland enlargement to filarial infection was investigated, but neither this nor other physical sign proved a reliable early indication of filarial infection. In Port Louis the infection is a benign one. Of 37 males of the positive cases 15 had enlarged glands, 3 hydrocele and 1 each had acute lymphangitis, abscess, varix, lymph scrotum, orchitis, fever. 19 were without clinical signs. There was no case of chyluria or elephantiasis. In 76 males, in which the blood was negative, 49 had enlarged glands, 9 had abscess, 11 had hydrocele, 6 orchitis, 1 fever and 4 elephantiasis. None had chyluria. The local vector *Culex fatigans*, was ascertained 28 years ago by d'Emmerez de Charmoy.

R. T. L.

Korke (Vishnu T.). **Observations on Filariasis in some Areas in British India. Part III.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 695–715. With 1 map in text. [2 refs.] [Central Research Inst., Kasauli.]

In Bihar and Orissa embryos occurred in the blood of 14 per cent. of the general population and the infection would appear to be uniformly distributed throughout the area, which is chiefly one in which paddy is cultivated. Useful information regarding the density of population in the various areas studied is given and the prevailing mosquitoes have been identified. Little or no infection occurred in the submontane and plateau areas; at sea level the infection reached the highest incidence. In the valley of the Ganges the greatest incidence occurred where water for irrigation was plentiful. Of cases suspected of filariasis on clinical grounds 15 per cent. showed embryos in the blood and 12 per cent. did not. Where filariasis was not suspected on clinical grounds embryos occurred in 14 per cent. A notable feature was the frequency of affection of the genitals in the areas above sea level and of the lower extremity in the areas at sea level. 8·3 per cent. of mosquitoes, of unidentified species, showed developmental stages in the Balasore area.

R. T. L.

Hoffman (Wm. A.), Marín (R. A.) & Burke (Alice M. B.). **Filariasis in Porto Rico. I. Progress Report on General Survey.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Sept. Vol. 4. No. 3. pp. 120–127. With 1 map. [School of Trop. Med., Univ., Porto Rico.]

The only filarial infection in man in the island of Porto Rico is *Filaria bancrofti*. It occurs to a greater extent on the moist coastal areas than elsewhere, but is to be found in many districts. The infection rate varied from 0·92 per cent. to 13·04 per cent. with an average of 5·11 per cent. in 3,857 persons examined.

R. T. L.

Burke (Alice M. B.). **Filariasis in Porto Rico. II. Notes on Family Incidence and Clinical Manifestations.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Oct. Vol. 4. No. 4. pp. 169–178. [3 refs.] [School of Trop. Med., Univ., Porto Rico.]

Two filarial districts in Porto Rico have been studied with special reference to the family relationship of infected persons. In many households only a single person was found with embryos in the blood in spite of apparently optimum conditions for the spread of infection. No striking tendency to spread in families was noticed. In 33 families in which one member had elephantiasis a second member showed other evidence of filarial infection in 18 instances. Not one out of 59 cases of elephantiasis showed microfilaria in the blood, while of 20 cases which had microfilariae only 2 had any symptoms. The total number of persons examined during the survey was 248.

R. T. L.

Maplestone (P. A.). **A Re-Description of *Wuchereria bancrofti* (Cobbold, 1877) with Special Reference to the Tail of the Male.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 683–686. With 2 plates. [5 refs.] [School of Trop. Med. & Hyg., Calcutta.]

Except for differences in the tail of the male the anatomy of the *Filaria bancrofti* worms described by various observers is very similar and the differences noted may be due to variation. The author agrees that the examination of the tail characters is one of great difficulty partly on account of natural coiling and partly due to transparency. In the two male specimens described all that could be made out with certainty in one were two pairs of minute papillae towards the tip of the tail and a single pair of broad adanal papillae. Other papillae if present were very shadowy and could not be definitely determined. In alcohol it appeared that there was a narrow caudal ala on each side supported by nine pedunculated papillae. In the second specimen the only papillae observed were 3 indefinite pre-anal and 2 post-anal papillae; these, however, did not appear pedunculated and the caudal alae could not be made out.

R. T. L.

Rao (S. Sundar). **Occurrence of Chyluria after Confinement.**—*Indian Med. Gaz.* 1929. Feb. Vol. 64. No. 2. pp. 87–88. [2 refs.] [Calcutta School of Trop. Med., Calcutta.]

Records of chyluria in India are very scanty. A case is described in which the onset of chyluria followed confinement and was due to relaxation of pressure as well as to the strain of the confinement which caused the dilatation and rupture of the lymphatics in all probability. The blood of the newborn child showed no filarial embryos. Nor did the mother's milk, although there was a heavy incidence of microfilariae in the blood.

R. T. L.

DATTA (Subodh). **Microfilaria in Hydrocele Fluid.**—*Calcutta Med. Jl.* 1928. Sept. Vol. 23. No. 3. pp. 134–135.

A case of double hydrocele is described in which there was no available history of any illness suggestive of filarial infection prior to the discovery of microfilariae in the hydrocele fluid. The author says "I have not been able to trace any case report showing microfilaria in hydrocele fluid."

R. T. L.

BRUG (S. L.). Filariasis in Ned.-Indië. [**Filariasis in the Dutch East Indies.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 5. pp. 681–704. With 4 figs. on 1 plate & 9 text figs. [49 refs.]

Brug gives a detailed description of *Microfilaria malayi*. A preliminary note appeared previously (see this *Bulletin*, Vol. 25, p. 471). For practical parasitological purposes the differential diagnosis is best founded upon the following characteristics which *Mf. malayi* shows against *Mf. bancrofti*: (1) The presence of 2 or 3 scattered nuclei in the point of the tail, (2) the clear visibility of the anal pore, (3) the nuclei are situated close together and cover each other in the microscopic picture.

In tabular form the author presents a review of what is known about the occurrence of filariasis in the Dutch East Indies. The distribution is very irregular and still insufficiently known.

Elephantiasis is common enough, the reports do not often mention lymphangitis, though it is likely that this symptom often precedes the elephantiasis and locally may seriously interfere with the general state of health of the population.

To which of the two species of Filaria, now known to exist in the Dutch East Indies, the clinical manifestations are to be ascribed is not yet established. Probably both species play a part; outside Java possibly *F. malayi* preponderates. Further research is necessary to throw more light on this and other problems, e.g., the question which insect is the carrier, the relation between the number of *Mf. malayi* in day and night blood, and whether this relation is reversible by change of life habits, as in *Mf. bancrofti*. The adult *Filaria malayi* has also still to be discovered.

W. J. Bais.

WADA (Kaoru). **The Experimental Treatment of Dog-Filariasis with the Antimony Preparation (Neostibnal).**—*Scientific Reports Govt. Inst. Infect. Dis.* Tokyo. 1927. Vol. 6. pp. 525–532. [11 refs.]

When neostibnal is injected intravenously into dogs suffering from *Filaria immitis* infection the filarial larvae disappear after a dose of 0·011 gm. per kilo of body weight has been repeated from 10 to 20 times. It is sometimes possible also to kill the adult worms in the heart cavity. Details of 7 experiments are given.

R. T. L.

Oh (Han Young). **Filariasis in Korea.**—*China Med. Jl.* 1929. Jan. Vol. 43. No. 1. pp. 16–21. With 1 map in text.

Out of 24 cases of filariasis in Koreans 12 showed no symptoms and the infection was discovered only in the course of routine blood examinations. 4 cases of elephantiasis showed no evidence of filarial infection, while in one case embryos were found. In four of the 24 cases the microfilariae had *no* sheath and there was no periodicity in their appearance in the peripheral blood. They were never present in large numbers. On these grounds the author records these embryos as *Filaria perstans.*

R. T. L.

Fujisaki (T.). **An Abnormal Case of Filariasis.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. Formosa).* 1928. Oct. No. 283. English summary p. 71. [In Japanese.] [Army Med. School, Tokyo, Japan.]

Although filaria is reputed to be very rare in Taihoku, a filaria adult was found in sections of a nodule removed from the right spermatic cord of a local soldier. No embryos occurred in the blood.

R. T. L.

Mya (Tha). **Cerebral Symptoms associated with Filaria.**—*Indian Med. Gaz.* 1928. Nov. Vol. 63. No. 11. pp. 636–637.

A detailed history is given of a patient admitted to hospital for unconsciousness of 4 hours' duration. Lumbar puncture was performed and the fluid which squirted out under pressure was bloody. The case ended fatally. The laboratory report stated that filarial larvae were found in the fluid. No other micro-organisms were present.

R. T. L.

Mackenzie (Ridley). **A Case of Chyluria due to** *Filaria bancrofti,* **with Lymph Varix in the Bladder Wall.**—*Canadian Med. Assoc. Jl.* 1928. Oct. Vol. 19. No. 4. pp. 458–459. [4 refs.] [Women's General Hosp., Montreal.]

Filariasis is rarely seen in Canada and is always of exotic origin. The brief account given of a case in a native of Barbados contains nothing of special interest.

R. T. L.

Young (W. A.). **Two Cases of Extra Peritoneal Abscess attributed to Filariasis.**—*Zanzibar Protectorate Ann. Rep. on the Med., San. & Biol. Divisions for Year 1927.* Section IX. pp. 82–83.

Two cases are described in which there were very extensive abscess cavities from which several pints of creamy pus were evacuated.

R. T. L.

Cohen (A. J.). *Filaria medinensis.*—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Jan. 21. Vol. 69. No. 1. pp. 55–58. With 2 figs. on 1 plate.

Cohen describes the case of an Arab in whom four guineaworms were found (two under the skin of the right, one under that of the left leg, and one at the breast). Probably the ulcer round the head of one of the worms in the right leg served as portal of entry for a serious tetanus

infection with which the patient came to hospital. The latter disease was cured (by intravenous injections of 40 per cent. urotropin ?) and the worms subsequently extracted. Apparently the slow extraction in the course of a few days was the safest.

The author sent living larvae to Brug (Med. Lab., Weltevreden) who fed a local Cyclops species with them and found that they developed well in this host. It is not yet decided whether autochthonous infection with *F. medinensis* is possible in Java. The case described was an imported one ; the patient left Arabia six months before he came under the author's observation.

W. J. Bais.

Brun (G.). Présence d'embryons de *Dracunculus medinensis* dans le pus d'un abcès. [**Guinea Worm Embryoes in an Abscess.**]—*Ann. Parasit. Humaine et Comparée.* 1928. Oct. 1. Vol. 6. No. 4. pp. 447–450. With 1 fig. [1 ref.] [St. Mandrier Hosp., Toulon.]

Guineaworm embryos occurred in pus freshly drawn by puncture of an abscess on the antero-external surface of the right leg of a case of dracontiasis from which the adult worm had not been completely extracted.

R. T. L.

Brown (H. W.). **Further Studies on the Longevity of the Eggs of** *Ascaris lumbricoides* **and** *A. suum.*—*Jl. Parasit.* 1928. Sept. Vol. 15. No. 1. pp. 14–22. With 1 graph. [11 refs.] [School of Hyg. & Public Health, Johns Hopkins Univ., Baltimore, Md.]

Eggs of *Ascaris lumbricoides* from man and from pig were found to remain viable in sandy soil cultures kept out of doors during the winter 1926–27 at Baltimore, U.S.A. The temperature alternated between freezing and thawing almost daily. All stages of embryonic development withstood these changes equally well. During the warm and dry weather of April the eggs in these cultures were killed. It was found that eggs when dried for a period contained a bubble of gas which aided the destruction of the egg upon moistening and the author offers a hypothetical explanation of its occurrence. Embryonated eggs of the pig ascaris dried at room temperature were exposed to a temperature of 35° C. for a short time : some were killed in 9 days, the majority were dead in 28 days and all were killed within 37 days.

R. T. L.

Maplestone (P. A.). **A Discussion on the Possibility of** *Ascaris lumbricoides* **Infection being acquired through the Skin.**—*Indian Med. Gaz.* 1928. Oct. Vol. 63. No. 10. pp. 553–555. [20 refs.] [Calcutta School of Trop. Med. & Hyg., Calcutta.]

A consideration of data published by various other observers, notably the natural hatching of eggs outside the body after several months' delay and the observations of Fülleborn on the migration of larvae by the blood stream, leads the author to suggest that possibly skin invasion with larvae of *Ascaris lumbricoides* from the soil may be a factor, hitherto overlooked, in the aetiology of this infection.

R. T. L.

Canning (Graeme A.). **Precipitin Reactions with Various Tissues of *Ascaris lumbricoides* and Related Helminths.**—*Amer. Jl. Hyg.* 1929. Jan. Vol. 9. No. 1. pp. 207–226. [15 refs.] [Dept. of Hyg. & Bact., Univ., Chicago.]

From the author's experiments it would appear that the use of whole worm tends to obscure the results. It is far better to find the most suitable tissue. Certain isolated tissues are pre-eminently, owing to their composition and embryonic origin, for use in performing immunological tests to trace biological relationships of animals, whereas others are not only unsuitable but would cause confusion. Cuticle is non-nucleated and hence does not show group reactions with the tissues within the species. It is a secretion product of an albuminoid nature.

R. T. L.

Coventry (Frances A.). **Hypersensitiveness to Helminth Proteins. II. Cutaneous and Precipitin Tests with Ascaris Extracts in Infected and Immunized Animals.**—*Jl. Preventive Med.* 1929. Jan. Vol. 3. No. 1. pp. 43–62. With 4 figs. [22 refs.] [Dept. of Hyg. & Bact., Univ., Chicago.]

Intracutaneous injections of ascaris extracts in rabbits and guineapigs infected with ascaris induced cutaneous reactions (delayed type) and occurred in rabbits immunized with ascaris extract. They vary greatly in intensity, but may persist for months after the total disappearance of worms from infected animals. They appear to be of the "hypersensitivity to infection" type. The reactions are specific for they do not occur in infected or immunized trichinous rabbits. Precipitins can be demonstrated in the serum of infected and immunized rabbits and guineapigs. They vary greatly in titre during the course of experimentation, but may persist for at least 8 months in rabbits. This persistence and variability helps to explain the complete lack of correlation previously reported by the author between precipitin content of serum of Honduras natives and infection with ascaris as determined by stool examinations, since practically all these natives were probably infected with ascaris at some period of their lives. Preliminary experiments failed to show passive transfer of skin hypersensitivity. The intensity of skin reactions failed to parallel the precipitin content of the serum.

R. T. L.

Herrick (Chester A.) & Emery (Frederick E.). **Changes in the Tonicity of Smooth Muscle produced by Toxins of *Ascaris lumbricoides*.**—*Jl. Pharm. & Experim. Therap.* 1929. Feb. Vol. 35. No. 2. pp. 129–141. With 3 text figs. [9 refs.] [Depts. of Zool. & Physiol., Univ., Wisconsin.]

Extracts from Ascaris from the pig produce colicky symptoms, diarrhoea, vomiting and frequent defaecation when fed to experimental animals. The extract showed haemolytic effects on the red blood cells of rabbits and guineapigs. There was an increase in the rate of contraction and in the tonus of muscle, and of isolated uterus of cat and rabbit.

R. T. L.

i. KANAGARAYER (K.). **Some Complications of Ascariasis.**—*Malayan Med. Jl.* 1928. Dec. Vol. 3. No. 4. pp. 164–166. [8 refs.] [Inst. for Med. Research, F.M.S.]

ii. RYRIE (Gordon A.). **Intestinal Obstruction due to Ascaris Infection.**—*Ibid.* pp. 166–167.

i. In Malaya the incidence of Ascaris infection is high, but Ascaris infestations as a rule give rise to no noticeable symptoms except vague gastro-intestinal disturbances especially in children. Occasionally the mechanical effects of obstruction of the gut and ducts leading thereto and the excretion of toxins lead to various pathological conditions. The author gives clinical notes of three fatal cases with unusual manifestations. One showed hyperpyrexia, marked irritability and hyperaesthesia. In the second there were convulsions with fever. In the third daily vomiting with worms passed *per os* and *per anum* with considerable abdominal pain and with emaciation. In a fourth case numerous small abscesses were found in the liver and the common bile duct was blocked by worms.

ii. To the above report Ryrie adds notes of a fifth case. At post-mortem 1,488 worms were collected. The small intestine was perforated in three places and had obviously given way owing to the mechanical action of its contents.

R. T. L.

SIVASAMBANDAN (R.). **Multiple Abscesses in the Liver Secondary to Ascaris Infection.**—*Malayan Med. Jl.* 1928. June. Vol. 3. No. 2. p. 101.

This paper notes the post-mortem findings in a case of a female child age 6 admitted to the General Hospital, Kangar. The liver was enlarged, congested and presented six abscesses on its surface varying in size from that of a marble to a pea. In each a large round worm was coiled up.

R. T. L.

BARDENWERPER (H. E.). *Ascaris lumbricoides* **Infestation with Extreme Anemia.**—*Jl. Amer. Med. Assoc.* 1928. Oct. 6. Vol. 91. No. 14. p. 1037.

There are no references in literature to the association of extreme anaemia with *Ascaris lumbricoides*. The author notes a fatal case in which this association occurred.

R. T. L.

SAKAGUCHI (Takeo). [**Experimental Studies on the Action of Ascarid Toxin.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1928. Mar. No. 385. [Summarized in *Japan Med. World.* 1928. Aug. 15. Vol. 8. No. 8. p. 219.]

A quantity of Ascaris "toxin" was prepared by keeping an Ascaris for some time in Ringer's solution, and a second lot was prepared by making an emulsion of an Ascaris or its body fluid. A guineapig which was fed with this toxin succumbed after gradual emaciation. After injection death occurred within 5 to 14 hours. The pathological changes were similar in both cases. These were degenerative changes in the suprarenal capsules, liver, heart, kidneys, lungs, stomach and intestines.

R. T. L.

Sakaguchi (Takeo). [**On Hemoglobin in the Body Fluid of the Ascaris.**] —*Saikingaku Zasshi* (*Jl. of Bact.*). 1928. Mar. No. 385. [Summarized in *Japan Med. World.* 1928. Aug. 15. Vol. 8. No. 8. p. 219.]

The English summary reads as follows :—

" The author tried examination with the body fluid collected from very fresh specimen obtained directly from the slaughtered pigs. He cut one end of the ascarid body and allowed the body fluid drop into a glass dish, with which he carried out chemical, spectral and micro-chemical test methods, in all of which he obtained positive results. He also tested for hemolysin and demonstrated it in the esophagus, stomach, and intestines but not in the uterus and ovarium of the ascaris."

R. T. L.

Otake (Masakichi). [**On the Occurrence of Ascarid Embryos in the Mammary Glands.**]—*Osaka Igakkwai Zasshi* (*Jl. Osaka Med. Soc.*). 1928. June. Vol. 27. No. 6. [Summarized in *Japan Med. World.* 1928. Dec. 15. Vol. 8. No. 12. pp. 329–330.]

Ascariasis is sometimes found among sucklings. The author, therefore, examined mammary glands of experimentally infected guineapigs and was able to demonstrate infection of the gland with ascaris larvae in many cases. Some of the larvae were found wedged in the pathologically changed tissues and others in perfectly normal tissue. The larvae appeared to be derived from the blood infection. He infers that an intake of ascaris from the mammary gland during suckling might cause ascariasis in human cases.

R. T. L.

Bachman (George W.). **An Intradermal Reaction in Experimental Trichiniasis.**—*Jl. Preventive Med.* 1928. Nov. Vol. 2. No. 6. pp. 513–523. With 1 coloured plate & 1 fig. [3 refs.] [Dept. Hyg. & Bact., Univ., Chicago.]

A local skin reaction specific in character follows the intracutaneous injection of *Trichinella* protein. Typical reactions appear within the first week after infection, whereas precipitin tests show that specific precipitins are not demonstrable until 20 to 30 days after infection. As a method of diagnosis the skin reaction is easy and much more practicable than the precipitin test since it can be made 20 or 30 days before the precipitin test.

R. T. L.

Fort (M. A.). **Investigation of Hookworm Conditions among Pupils from Six to Ten Years of Age in Four School Districts in Decatur County, Georgia.**—*Southern Med. Jl.* 1928. Nov. Vol. 21. No. 11. pp. 917–920. [10 refs.]

In South-west Georgia the rate of hookworm infection among the children ranges from 69 to 80 per cent. An average reduction of 96 per cent. was obtained by the use of carbon tetrachloride. Although no accidents occurred with this drug in 5,000 cases Smillie and Pessoa's modification was adopted. The dose consists of carbon tetrachloride 2 parts and oil of chenopodium 1 part, dispensed in a small homeo vial to be taken home and given on sugar in a spoon on waking in the morning. The sugar is quickly washed down with plenty of water and the child is made to lie in bed for an hour and a half. A full dose of salts is then administered and when this has acted the child is allowed

to eat breakfast and go out as usual. From a study of the eosinophilia present the author notices a high eosinophil count in children without hookworm and he believes even light infections with hookworm may produce an eosinophilia that lingers for years.

R. T. L.

Jacocks (W. P.). **A Periodic Mass Treatment Programme as a Temporary Measure to control Hookworm Disease in Ceylon.**—*Ceylon Jl. Sci.* (Sect. D. Med. Sci.) 1929. Feb. 13. Vol. 2. Pt. 2. pp. 41–50. [4 refs.]

From clinical observations it had been realized that a considerable proportion of the inhabitants of Ceylon, although infected with hookworm suffered no ill-effects. Following upon the work of Smillie and Augustine it was considered a safe basis to set 40 worms (approx. 500 eggs per gram) as a temporary base-line below which treatment was not indicated. In 1924–5 every province was surveyed, by the aid of Stoll's technique, to determine the incidence and intensity of hookworm. The results gave an average count of 1,102 eggs per gram of faeces per person for the country as a whole and over 50 per cent. harboured enough parasites to cause symptoms. A program was devised to give island-wide mass treatment at periodical intervals. A detailed account of the scheme is set out and as it has proved feasible and satisfactory in Ceylon it may be useful in other countries where the conditions are similar.

R. T. L.

Jacocks (W. P.). **Value of Periodic Mass Treatment in controlling Hookworm Disease.**—*Ceylon Jl. Sci.* (Sect. D. Med. Sci.) 1929. Feb. 13. Vol. 2. Pt. 2. pp. 51–57. With 1 fig. [3 refs.]

The island-wide mass treatment inaugurated in Ceylon in 1926 provided two rounds of treatment in schools and estates at 12 to 18 months' interval. An egg-count was instituted before a third treatment was begun in the district. It was found that the two series of mass treatments in the Northern and North-Central Provinces had reduced the intensity rate, the egg-count falling from 1,412 in 1925 to 391 in 1928.

R. T. L.

Howard (H. H.). **Hookworm Disease and Hookworm Infestation in Porto Rico.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Dec. Vol. 4. No. 6. pp. 239–246.

In this eloquent popular address the author refers to the way in which the pit latrine (with a concrete base, a fly-proof box seat, a well-framed wood or sheet-iron super-structure, and a sheet-iron roof) has become standardized throughout the world as the accepted type among great rural populations. A marked diminution of filth-borne diseases has followed their installation. A " bored hole " latrine is being tested in Egypt as an alternative, but an element of doubt arises here for its frank purpose is to carry infective material into the ground water supply.

R. T. L.

MAPLESTONE (P. A.). **A Simple Method of preserving Faeces containing Hookworm Eggs.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 675–682. With 1 plate. [3 refs.] [Calcutta School of Trop. Med. & Hyg., Calcutta.]

After considering various practical difficulties in applying, under Indian conditions, LANE'S method for the temporary preservation of stools containing hookworm eggs so that these can be examined at a central station instead of in the field, the author describes his experiences with antiformin in a 2 per cent. strength in water. Although the eggs degenerate in 14 to 18 days they are easily recognized because of the remarkable freedom from "camouflage." Fermentation occurs and the eggs undergo no development, but they are not killed for 24 hours after the addition of antiformin. Cultures were successfully made. The details of technique which has been followed in an investigation of 810 stools are given.

R. T. L.

SINCLAIR (Mavis J.). **Comparison of the Caldwell and Stoll Methods of counting Hookworm Ova in Stools.**—*Ceylon Jl. Sci.* (Sect. D. Med. Sci.) 1929. Feb. 13. Vol. 2. Pt. 2. pp. 59–65. [4 refs.]

A comparison of the Caldwell and Stoll methods shows that they differ so little that the case and convenience of working need alone be considered. The Caldwell method obviates the tiring shaking required by the Stoll routine. The sugary solution of the Caldwell technique requires no coverslip and the viscid sugary solution is very easy to handle. Moreover, the eggs float on the surface. The cost is in favour of the Stoll technique, but the Caldwell method is considered the easier, cleaner and more satisfactory.

R. T. L.

AUGUSTINE (Donald L.), NAZMI (M.), HELMY (M.) & MCGAVRAN (Edward G.). **The Ova-Parasite Ratio for** *Ancylostoma duodenale* **and** *Ascaris lumbricoides.*—*Jl. Parasit.* 1928. Sept. Vol. 15. No. 1. pp. 45–51. [11 refs.] [Government School of Med., Cairo.]

To gain some definite information on the ova-parasite ratio for *Ancylostoma duodenale* when the parasite is the only hookworm present in a given population the senior authors visited Egypt and made an intensive study, with two Egyptian colleagues, of 74 cases. The factor 1·19 may, with confidence, be used to estimate the number of females present when using the small drop, 0·075 cc., according to Stoll's method. The female *Ancylostoma duodenale* produces therefore about 238 ova per cc. formed faeces. 27 cases of *Ascaris lumbricoides* were similarly studied. Here the factor was 13·5 and the female worm was computed to produce about 2,700 ova per cc. formed faeces.

R. T. L.

PAYNE (George C.). **Penetration by Infective Hookworm Larvae of the Materials used in the Manufacture of Shoes.**—*Amer. Jl. Trop. Med.* 1929. Jan. Vol. 9. No. 1. pp. 79–82. [1 ref.]

Canvas shoes with rubber soles are distributed in large numbers by charitable organizations in the West Indies as a means of protection

from hookworms. This movement has adversely affected the campaign for improving the sanitary habits in these regions. The experiments recounted in this paper show that wet canvas shoes are readily penetrated by mature hookworm larvae. It is also proved that larvae migrate freely over, although apparently they do not actually succeed in penetrating, wet leather. Larvae readily enter minute defects in leather stitching and it is suggested that an ordinary pair of shoes will only give full protection to an agricultural labourer for a very short period.

R. T. L.

HEYDON (G. M.). **The Effect of Light and of Drying on Infective Hookworm Larvae.**—*Med. Jl. Australia.* 1927. Oct. 29. 14th Year. Vol. 2. No. 18. pp. 611–614. [5 refs.] [Australian Inst. Trop. Med., Townsville, Queensland.]

Contrary to the opinion expressed by Looss, after a critical study of the work of previous observers, the light of day rapidly injures and kills infective larvae of both species of hookworms which infest man, while larvae kept in complete darkness in water suffer practically no mortality for a long time. In experiments conducted at Townsville, Queensland, exposure for two hours in clean water to direct sunlight was sufficient to kill all mature larvae while a few days' exposure in diffuse daylight in a well-lighted room was similarly fatal. The author finds that the larvae of *Ancylostoma duodenale* can survive drying for short periods only, though for more than a few minutes, in the climate of Townsville. In apparently dry earth some may survive for a few days. The larvae of *N. americanus* appear to be somewhat less resistant. Discontinuous illumination of *A. duodenale* larvae 10 days old to bright sunlight for six minutes daily proved that a total exposure of half an hour killed most of the larvae. A interesting application of the use of a hot needle to differentiate hookworm larvae from free living nematodes is mentioned.

R. T. L.

EISMA (Molle). **The Third Stage Larvae of** *Anchylostoma caninum* **and** *Anchylostoma ceylanicum.*—*Tijdschr. d. Nederl. Dierkundige Vereeniging.* 1928. 3rd Ser. Vol. 1. No. 2. pp. 72–76. With 4 figs. [Inst. Trop. Med. & Lab. of Trop. Hyg., Univ., Leyden.]

From a biometric study of the larvae the author concludes that those of *Ancylostoma caninum* can be distinguished from those of *A. ceylanicum* by means of the length of the tail measured on the sheath. The following table must be used :—

	A. caninum.	*A. ceylanicum.*
Total length (sheath) ...	532μ–760μ	608μ–790·4μ
Length of tail (sheath) ...	73μ–109·9μ	109·9μ–145·5μ

A method is described by which the head of the larva can be accurately examined. It is shown that the infective larvae of *A. ceylanicum* and of *A. caninum* have each three lips. On each lip are two papillae as described by Looss.

R. T. L.

KOBAYASHI (T.). Ueber Regenerationserscheinungen der Erythrozyten bei Ankylostomiasisanämien. [**The Regeneration Appearances of Erythrocytes in Ankylostomiasis Anaemia.**]—*Japanese Jl. Med. Sciences. Trans. VIII. Internal Med., Pediatry & Psychiatry.* 1927. Dec. Vol. 1. No. 3. pp. 453–479. With 3 figs. [57 refs.]

A study of the erythrocytes during the course of ankylostomiasis anaemia and during the treatment with iron is reported. The various abnormalities of the red cells, their fragility, their oxygen content, the presence of urobilin in the urine of patients and of bilirubin in their serum, are all discussed. During the treatment by iron the oxygen content of the red cells and its oscillation gave the first indication of improvement in the anaemia. Although the haemoglobin content and the red cell count gradually increased, it is pointed out that there is a primary increase in young erythrocytes. The urobilin of the urine, the bilirubin of the serum and the serum protein all increased to their normal value.

Tables, curves and illustrations of the different types of erythrocytes are given.

R. Lovell.

SHELMIRE (Bedford). **Experimental Creeping Eruption from a Cat and Dog Hookworm** (*A. braziliense*).—*Jl. Amer. Med. Assoc.* 1928. Sept. 29. Vol. 91. No. 13. pp. 938–943. With 7 figs. [10 refs.] [College of Med., Baylor Univ., Dallas, Texas.]

Clinical and experimental evidence is brought in support of the work of WHITE and DOVE implicating *Ancylostoma braziliense* [see this *Bulletin*, Vol. 25, p. 701]. In more than one hundred cases, in the author's practice, a definite history of contact with moist earth or sand was obtained in most instances. By far the greatest number occurred in children. Picnicing or bathing at a sandy beach, wading in creeks, digging in flower beds or making plumbing connections were some of the apparent sources of infection. Eighteen volunteers were submitted to experimental infection. A drop of water containing about 100 larvae was applied to the forearm in each case. Very fine photographs illustrating the local reactions are given in the text. There was no evidence that adult worms developed later.

R. T. L.

LAMBERT (S.). [**Mass Treatment justifies Itself.**] [Correspondence.]—*Jl. Trop. Med. & Hyg.* 1928. Sept. 15. Vol. 31. No. 18. p. 244.

Dr. CORNEY, to whom the credit of first noticing hookworm in Fiji was given by Lambert in his paper "Mass Treatment justifies Itself," has pointed out that in 1896 he wrote as follows in a Legislative Council Paper: "The existence of this entozoon in Fiji was first noted by my predecessor, Sir William MCGREGOR, in 1876, in the intestines of a native, and again in 1879 in two instances, but without pathological complications."

R. T. L.

Raynal (J.) & Leger (J.). Note au sujet de l'action des pyréthrines (chrysémine) sur les ankylostomes. [**Action of Chrysemine on Ankylostomes.**]—*Bull. Soc. Path. Exot.* 1929. Jan. 9. Vol. 22. No. 1. pp. 23–26.

In two cases with large numbers of hookworm eggs in their stools no effect was observed from the administration of chrysémine : in one case containing the eggs of whipworm also, these could not be found after the treatment.

R. T. L.

Minamizaki (Tadashichi). [**Studies on Natural Infectious Road of Ancylostomiasis. I. Communication. Experiments on the Development of the Ancylostoma Eggs in the Soil and Water and the Longevity of the Larvae in them.**]—*Kei-o Igaku (Jl. Keio Med. Soc.).* 1928. July. Vol. 8. No. 7. [Summarized in *Japan Med. World.* 1928. Dec. 15. Vol. 8. No. 12. pp. 328–329.]

By spreading human faeces, containing hookworm eggs, in the manner followed by the Japanese farmers in manuring the author studied the natural effects upon the viability of the eggs and larvae. During the warm seasons the eggs developed into larvae which were recoverable from the soil for about six months. During the cold season they did not develop into larvae but were quickly killed. " In the deeper layer of the soil and during the summer time, the eggs hatched and the larvae lived for about 4 months, but during much colder seasons they were killed."

R. T. L.

Ohba (Tatsunosuke). [**On the Changes of the Blood Features, especially Eosinophilia, in Parasitisms of Ancylostoma and its Allied Parasites. I.**]—*Tokyo Iji-Shinshi (Tokyo Med. News).* 1928. Aug. No. 2584. [Summarized in *Japan Med. World.* 1928. Dec. 15. Vol. 8. No. 12. pp. 324–325.]

Ancylostoma infections can be differentiated from *Necator* infections, according to the author, by the fact that in the former the eosinophilia is sometimes as much as 13 times the normal count ,while in the latter it is about 5 to 6 times.

R. T. L.

Troisier (J.), Deschiens (R.), Limousin (H.) & Delorme (M.). L'infestation du chimpanzé par un nématode du genre *Hépaticola.* [**Infestation of Chimpanzee by** *Hepaticola* **sp.**]—*Ann. Inst. Pasteur.* 1928. July. Vol. 42. No. 7. pp. 827–840. With 2 text figs. & 1 coloured plate. [21 refs.]

This paper is of interest chiefly in the account it gives of the tissue reactions to *Hepaticola* invasions of the liver which are beautifully illustrated.

R. T. L.

Bass (Elizabeth). **A Consideration of Some of the Intestinal Parasites, with a Report of Three Cases of " Oxyuris Incognita " Infestation.**—*New Orleans Med. & Surg. Jl.* 1928. Nov. Vol. 81. No. 5. pp. 342–348. With 4 text figs. [8 refs.]

This popular lecture to the Louisiana State Medical Society deals with the five prevalent round worms in man. Mention is made of three instances of the occurrence in the stools of " Oxyuris incognita," i.e., *Heterodera radicicola.*

R. T. L.

Nathan (Helmuth). Zwei seltene Befunde bei Oxyureninfektion des Menschen. [**Two Rare Findings in Oxyuris Infection of Man.**]—*Frankfurter Ztschr. f. Path.* 1928. Vol. 36. No. 1. pp. 82–92. With 6 text figs. [20 refs.] [Path. Inst., General Hosp., Hamburg St. Georg.]

Dr. Nathan describes two unusual seats of infection of oxyuris in human patients. In one case the worms were said to be found in the spleen, and the author raises the question whether or not this is the first case of oxyuris infection in that organ. In the second case, the worms were found, by incision, in a perianal abscess. Associated with this, in the same region, was an inflamed area which passed on to the stage of abscess-formation only with difficulty. This area was characterized by a granulation tissue with an abundant eosinophilia. In the substance of the tissue were found large numbers of immature oxyuris eggs all of which were in process of being digested, either entire, by giant cells, or by the penetration into the eggs of leucocytes, microphages and macrophages. Dr. Nathan remarks that the histological picture of this inflamed area bore similarities to that of the abscess.

R. T. L.

Riddell (W.). **Gordiidae as Parasites of Man.**—*Cent. f. Bakt.* I. Abt. Orig. 1928. Nov. 7. Vol. 109. No. 5/6. pp. 331–338. [32 refs.]

In addition to recording a fresh case of infection of man with a gordiid worm the author has given a list of previous cases of human infection. The total recorded now numbers 23. The mode of infection is discussed, and although these worms develop normally in insect larvae the author does not think that the possibility of direct infection by the larva can be ruled out.

R. T. L.

Stiles (C. W.) & Baker (C. E.). **A Fifth Case of** *Gongylonema hominis* **in Man in the United States.**—*Jl. Amer. Med. Assoc.* 1928. Dec. 15. Vol. 91. No. 24. pp. 1891–1892.

A round-worm about 47 mm. long and considerably macerated had been removed from the lower lip of a girl aged 18 in Richmond, Va. The specimen showed the numerous bosses on the anterior end which are distinctive of the genus *Gongylonema*. As further specific differentiation could not be made the author prefers to name this a second specimen of *G. hominis* rather than attribute it to accidental infection with *G. pulchrum* or other species known in domesticated animals.

R. T. L.

Arce (Jose), Balado (Manuel) & Franke (Elisabeth). Anatomia patológica de la cisticercosis cerebral humana.—*Bol. Inst. Clín. Quirúrg.* Buenos Aires. 1928. Vol. 4. No. 34. pp. 377–382. With 8 figs. (3 coloured). [3 refs.]

——, Dimitri (Vicente) & Balado (Manuel). A propósito de un caso de cisticercosis cerebral. Operación. Curación.—*Bol. Inst. Clín. Quirúrg.* Buenos Aires. 1928. Vol. 4. No. 34. pp. 371–376. With 6 text figs.

Freudenthal (Poul). Echinococcose alvéolaire bovine observée pour la première fois en Islande.—*Acta Path. et Microb. Scandinavica.* 1927. Vol. 4. No. 3. pp. 206–220. With 6 figs. on 3 plates. [40 refs.] [Inst. of Path. Anat., Univ., Copenhagen.]

Gnedina (M. P.) & Statirova (N. A.). Sur l'Enterobius dans les pouponnières de Moscou et sur la stérilisation des porteurs.—*Russian Jl. Trop. Med.* 1928. Vol. 6. No. 6. pp. 394–401. [4 refs.] [In Russian.]

Gutiérrez Lara (J.). Ideas generales sobre el parasitismo intestinal en Fernando Poo.—*Medicina Paises Cálidos.* Madrid. 1929. Mar. Vol. 2. No. 2. pp. 153–154.

Kirillova-Oudintsova (A. W.). Sur la fréquence du *Dibothriocephalus latus* dans la Circonspection de Tomsk.—*Russian Jl. Trop. Med.* 1928. Vol. 6. No. 6. pp. 390–393. [In Russian.]

Sarcinella (F.). Ascaridiose à forme typhoïde.—*Ann. Soc. Belge de Méd. Trop.* 1928. Dec. Vol. 8. No. 3. pp. 291–292.

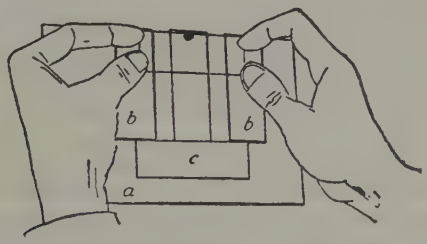
MISCELLANEOUS.

Cock (Frederick). **A Method of making a Blood Film.**—*Brit. Med. Jl.* 1928. Feb. 25. pp. 306–307. With 1 text fig.

The method of making a blood-film described in the following quotation from the original paper is said to assemble the leucocytes in the central zone of the film so completely that in the Leishman-stained film that zone shows to the naked eye as a bluish strip.

"A piece of glass about the size of a half-plate negative (*a* in the accompanying diagram) is cleaned, and on one side white paper is gummed so that the quality of the film can be more readily observed in preparation; *b* and *b* are each two glass slides stuck together with Canada balsam and mounted two inches apart on *a*; *c* is a single glass slide mounted in the position shown.

"A drop of blood is taken on the end of a slide and placed between *b* and *b*, and a second slide is made to rest on *b* and *b* at right angles to the first, so that there is the thickness of a slide separating the glass surfaces between which the drop of blood lies. Contact of blood between upper and lower slides is made by raising the latter, which is then allowed to fall back on the stage. The upper slide is now passed over the lower, the drop of blood following and leaving a very thin film behind, the time taken to traverse the slide being about thirty seconds. The margins of such a film



Method of making a blood film.
[Reproduced from the *British Medical Journal*.]

consist mostly of red blood cells, while in the central zone numerous white blood cells and blood platelets are deposited. This arrangement is so striking that after using Leishman's stain the bluish tint of the central zone, due to the basophil elements of the blood, can be seen by the naked eye; the margins are stained pink. Under the microscope the numerous white blood cells and blood platelets in the central zone immediately arrest attention, and in some specimens there will be fields where not a single red blood cell is to be seen. The number of white blood cells in a given field varies considerably, but fifteen to thirty cells are quite commonly observed, and I have counted over sixty."

A. Alcock.

Brahmachari (Upendranath) & Sen (Parlimal Bikas). **On a New Method of fixing Thick Blood Films for the Finding of Leishman-Donovan Bodies and Malarial Parasites in the Peripheral Blood.**—*Calcutta Med. Jl.* 1928. Feb. Vol. 22. No. 8. pp. 439–441. With 1 text fig. [Univ. College of Science, Calcutta.]

For details the original paper must be consulted. The film is spread by pulling, not by pushing. After drying, the slide is kept well immersed

in acetone for 5 to 10 minutes, then quickly dried, dehaemoglobinized, washed with methyl alcohol, dried, and stained with Leishman or similar stain.

A. Alcock.

Ochs (Georg Wilhelm). Ueber den Einfluss der Temperatur auf die Färbung von Blutausstrich-Präparaten. [**Temperature and the Staining of Blood Films.**]—*Folia Haematologica.* 1928. Dec. Vol. 37. No. 3/4. pp. 241–257. With 3 graphs in text. [29 refs.] [Children's Clinic, Univ., Frankfurt a. M.]

Methylene blue, eosin and Giemsa stains in buffer solutions were used. With methylene blue, the intensity of staining both of erythrocytes and nuclei of leucocytes increased at each temperature, as the alkalinity (pH 4·9 to 6·8) of the buffer solution increased. The cytoplasm of the lymphocytes proved an exception, for here the staining was more intense at pH 4·9 than at pH 6·8 and least at pH 6·0. The margin of the lymphocyte stained more deeply than the cytoplasm. With eosin the greatest intensity of staining occurred in the acid region, i.e., at pH 4·9; was less intense at pH 6·0 and still less at pH6·8. When the pH of the buffer solution was kept constant and the temperature made to vary, an increase of intensity of staining with rise of temperature was observed, although not of so definite a character. Much more striking was the alteration in shade of colouration. Giemsa staining reactions followed the same course as those of methylene blue. Erythrocytes may be stained with methylene blue, but the nuclei of leucocytes have not been stained with eosin. The staining of the granules of neutrophile leucocytes with the basic dye methylene blue was shown to be possible under certain conditions. Thus, with a pH of 6·8 at 2° C. some cells showed traces of staining of granules; at 22° C. almost all the neutrophile leucocytes showed definite staining, while at 42° C. the affinity of the granules for the dye again diminished. This staining of neutrophile granules by basic dye with increase of temperature has its optimum effect at pH 6·0 to 7·0. Pathological granules may stain at a lower pH.

W. F. Harvey.

Ferrari (Antonino). Coloração rapida dos hematozoarios pela solução de azul-eosina. [**A Solution for the Rapid Staining of Blood-Parasites.**]—*Brasil-Medico.* 1928. Nov. 17. Vol. 42. No. 46. p. 1294.

Solution I. Methylene blue 1 gm., Ammon. carbonate 1 gm., Aq. dest. 100 cc., well mixed by grinding up in a clean mortar and placed in a 200 cc. flask for 8–10 days, being well shaken daily. To this is then added :—

Solution II. Eosin 1 gm., Aq. dest. 500 cc., in a flask large enough to allow of thorough shaking. The vessel is then left for 24 hours for precipitation of "methyl-eosinate of ammonia." The following day this is filtered off, dried at 37° C. and dissolved in 500 cc. of pure methyl alcohol, and to the product is added 0·25 cgm. of methylene blue and 5 per cent. neutral glycerin for preservation.

The method of use is as follows : On the fresh smear of blood is poured 4–5 drops of the staining solution and left for a minute; 8–10 drops of filtered water are next added and the slide gently agitated to mix the fluids and then left for 2 minutes, after which the slide is washed and dried. The whole process takes only three minutes and the differential staining is the same as that of Giemsa and other Romanowsky stains.

H. Harold Scott.

Beacom (Dean N.). **Differential Blood Counts. A Comparison of the Accuracy obtained by Various Methods.**—*Jl. Lab. & Clin. Med.* 1928. Jan. Vol. 13. No. 4. pp. 366–375. With 1 chart in text. [5 refs.] [School of Med., Univ. of Colorado, Denver.]

The author discusses methods of making blood-counts in American practice so far as 82 answers to a questionary sent out by him afford him data, and he concludes that a differential count made either with slides or with cover-slips is accurate within 3 per cent. if the film have been properly made and if 300 cells in three different areas have been counted. The method of making a film that he prefers, as giving a more even distribution of leucocytes than any other, is by cover-glass and slide. A small drop of blood is taken near the end of a clean slide. A cover-glass is dropped on this blood, and as soon as the blood has spread to the full between the cover-glass and the slide the cover-glass is slid fairly rapidly along the length of the slide with two fingers of the right hand, the slide being held firm on the table with the left hand.

A. Alcock.

Newham (H. B.) & Harvey (F. M.). **Some Notes on Blood-Counts.**—*Jl. Trop. Med. & Hyg.* 1928. Apr. 2. Vol. 31. No. 7. pp. 77–78. [1 ref.] [London School of Hygiene & Trop. Med.]

In the red-cell-counts here described the slide used by the authors was of the latest pattern of Leitz, the uniformity of distribution of the cells over the whole scale being tested against an old slide of the Thoma-Zeiss pattern. The following are their conclusions :—

" (1) An error not exceeding ±100,000 is to be anticipated in any estimation.

" (2) In order to ensure approximate accuracy in any estimation of the red cell-content of the blood only accurately calibrated pipettes should be used.

" (3) An estimate based on the enumeration of the cells met with over 80 squares is unreliable. 256 squares should be counted.

" (4) A greater degree of accuracy would appear to be obtained with the old pattern of counting chamber.

" (5) It appears to be preferable to use a dilution of 1/100 rather than 1/200."

A. Alcock.

Sato (Akira) & Shoji (Kenji). **Counting Chamber Peroxidase Method for Blood. Simultaneous Rapid Differential Leucocyte Count and Total Leucocyte Count.**—*Jl. Lab. & Clin. Med.* 1928. Aug. Vol. 13. No. 11. pp. 1058–1060. With 1 fig. [3 refs.] [Dept. of Pediat., Faculty of Med., Tohoku Imperial Univ., Sendai, Japan.]

The technique is as follows :—

(1) Prepare the solutions : A.—1 per cent. copper sulphate 90 ; 30 per cent. acetic acid 1 ; glycerine 2 ; distilled water to 300, and filter. B.—Benzidine pur. Merck 0·5 gm. ; distilled water to 200 cc., and filter. Add 4 drops of 3 per cent. hydrogen peroxide to the filtrate and preserve in a brown bottle. C.—1 per cent. saffranine, filtered. (2) Set out 2 cc. of A in a watch glass and add 2 drops of C. (3) Place 2 cc. of B in a second watch glass. (4) Draw blood in a leucocyte pipette up to the 0·3 mark and follow, after wiping, with the solution in the first watch glass till the mixture fills the lower fourth of the pipette. (5) Hold a finger over the

end of the pipette and rotate it on its long axis to mix blood and staining solution. (6) Wait for at least 4 minutes and then fill to the 11·0 mark with solution in second watch glass. (7) Mix thoroughly by rotation. (8) Count the leucocytes in a counting chamber.

By this method myeloid leucocytes are stained greenish blue; monocytes appear faintly red with distinctly blue granules, and lymphocytes are stained distinctly red without any shade of blue or green.

W. F. Harvey.

SATO (Akira). **Two Methods for the Eosinophile Count in the Counting Chamber for Routine Work.**—*Jl. Lab. & Clin. Med.* 1928. Aug. Vol. 13. No. 11. pp. 1056–1057. With 1 fig. [2 refs.] [Dept. of Pediat., Faculty of Med., Tohoku Imperial Univ., Sendai, Japan.]

The first procedure is intended for eosinophiles only and is a slight modification of the DUNGER method :—

(1) Prepare No. 1 solution (a 1 per cent. water soluble eosin, Grubler) and No. 2 solution—acetone 1 part; distilled water 5 parts. (2) Mix No. 1 solution, 1 part, and No. 2 solution, 4 parts. (3) Draw blood up to the ordinary mark in a leucocyte pipette and fill up with staining solution to mark 11. (4) Count the eosinophiles in a counting chamber.

The second procedure employs the peroxidase method of SATO and SHOJI (see above). By this method, with a low power objective, the eosinophiles show up dark blue among the lighter blue neutrophiles, while monocytes appear red.

W. F. Harvey.

DA GAMA (Luis Aleixo). Contribuição ao estudo do poder hemolitico do sangue em alguns estados normais e patológicos nos indigenas de Goa. [**Study of the Haemolytic Power of the Blood in Normal and Pathological States in Natives of Goa.**]—*Arquivos da Escola Méd.-Cirurg. de Nova Goa.* 1928. Ser. A. No. 2. pp. 219–237. French summary pp. 237–238. [Bact. Inst., Nova Goa.]

A few observations each on persons with tuberculosis, malaria, syphilis, nephritis, and pregnancy.

A. G. B.

BLUMENTHAL (W.). Giemsa-Schnellfärbung für Blutpräparate.—[**Rapid Giemsa Staining of Blood.**]—*Muench. Med. Woch.* 1928. Nov. 9. Vol. 75. No. 45. p. 1922.

ARNETH. Bemerkung zu vorstehender Mitteilung.—*Ibid.* p. 1922.

Freshly prepared Giemsa solution is diluted with 3 parts methyl alcohol, which gives a permanent staining solution. Sufficient stain is placed on the dried film to cover it and allowed to act for 3 minutes. This also fixes the film. The stain is then diluted with an equal quantity of distilled water, the two mixed, allowed to act for 3 to 5 minutes and then rapidly washed off with distilled water. The effectiveness of this procedure is vouched for by Arneth.

W. F. Harvey.

PAWAN (J. L.). **A Note on the Use of the Romanowsky Stains in the Tropics.**—*Ann. Trop. Med. & Parasit.* 1928. Nov. 9. Vol. 22. No. 3. pp. 303–305.

Soda glass in a hot humid climate produces a film of surface alkali, and distilled water will readily take up this alkali. The results are, an alteration of pH and unsatisfactory staining with Romanowsky stains. Such a film is much less liable to be formed with pyrex glass. Both distilled water, therefore, and the stain itself should be kept in pyrex glass bottles. Contrary to the ordinary view, it is not necessary that the methyl alcohol used should be absolutely pure and acetone-free. Under the circumstances of a hot humid climate, Leishman and Giemsa stains deteriorate, when kept in ordinary glass bottles, in 8 days. If pyrex glass be used, a supply of stain will give good results for 6 to 9 months if small amounts of methyl alcohol are added to replace that lost by evaporation.

W. F. Harvey.

CHUKERBUTI (J. C.). **Technique for Leishman's Stain Suitable for "Field" Application.**—*Indian Med. Gaz.* 1928. Oct. Vol. 63. No. 10. p. 578.

The method is as follows :—

(1) Draw a boundary line with grease pencil on either side of the most homogeneous portion of the film. (2) Pour freshly prepared stain on the enclosed portion and allow to dry thoroughly. (3) Dip into methylated spirit and shake until the film becomes a greyish pink colour. (4) Wash. (5) Blot immediately, dry and mount.

If sediment is still present, treat again with methylated spirit.

W. F. Harvey.

FEEMSTER (Roy F.) & FEEMSTER (Olive S.). **A Blood Stain giving more Constant Results. A New Departure in Staining with Romanowsky Stains which eliminates a Number of Sources of Error.**—*Jl. Lab. & Clin. Med.* 1928. Sept. Vol. 13. No. 12. pp. 1139–1143. [1 ref.] [Dept. Bact. & Path., Tulane Univ., Louisiana.]

The method is one of overstaining with Wright's stain and decolourizing with the same stain dissolved in 85 to 90 per cent. ethyl alcohol.

Two solutions are used. No. 1 is prepared by making a saturated solution of Wright's stain with the dry powder in absolute methyl alcohol, filtering and diluting with 1-5th its volume of methyl alcohol. No. 2 is a saturated solution of the stain in 85 to 90 per cent. ethyl alcohol. The directions for using are given as : (1) Drop on just sufficient No. 1 solution to cover blood smear ; drain off excess stain at once ; let stand until all of the stain remaining on the slide turns red. (2) Flood with distilled water and allow to stand for one or two minutes. (3) Wash with the decolourizing No. 2 solution until most of the red precipitate disappears. (4) Wash with distilled water, dry and examine.

Distilled water is usually slightly acid and makes a satisfactory diluting and washing medium. Variation in acidity, however, may be dealt with by the use of buffered solutions. For this purpose 1 per cent. pot. dihydrogen phosphate and disodium hydrogen phosphate are kept. Ten cc. of the latter are added per litre of distilled water and 10 to 30 cc. of the former, according to the shade of erythrocytes desired.

W. F. Harvey.

Alport (A. Cecil). **Combined Vital and Non-Vital Method of staining Corpuscles.**—*Lancet.* 1928. July 28. p. 170. [St. Mary's Hosp., Paddington, London.]

The technique is as follows :—

(1) Use a clean grease-free slide. (2) Pass it through the flame 9 or 10 times. (3) Take a large drop of blood on the cooled slide and add to it about the same amount of 0·3 per cent. cresyl blue in normal salt solution containing 0·2 per cent. pot. oxalate. (4) Mix blood and stain by drawing up into pipette 3 or 4 times. (5) Place a drop of the mixture on the end of a clean slide and, holding another slide at an angle of 50, make a film. (6) Cover the dried film with 12 drops of fresh undiluted Leishman's stain and allow it to stand 2 minutes to fix. (7) Add 12 drops distilled water and allow to stand 7 to 30 minutes. (8) Wash the film carefully until nearly all the blue colour has disappeared. (9) Dry rapidly with blotting paper.

The washing must not be overdone and a faint blue tinge should remain. With this method reticulocytes are shown where polychromasia is given by Leishman's stain.

W. F. Harvey.

Shu (H. J.). **Liquid Paraffin replacing Cedar Oil in Microscopy.**—*China Med. Jl.* 1928. Feb. Vol. 42. No. 2. p. 114.

Pure heavy paraffinum liquidum, B.P. (petrolatum liquidum, U.S.P.) is here stated to be an excellent substitute for cedar oil for microscope work ; indeed, since it remains clear in any climate, is not volatile, is more limpid and does not become thick in cold weather, is easily wiped off the lens, is a good lubricant for the microscope, besides being cheaper and easier to obtain, it has some obvious advantages over cedar oil. It is also as good as cedar oil for clearing certain objects for microscopic examination—e.g., thick dried smears of faeces for eggs of intestinal worms.

A. A.

Chopra (R. N.), Gupta (J. C.) & Pillai (K. Venkatachalam). **Observations on the Action of Emetine on the Gastro-Intestinal Tract.**—*Indian Jl. Med. Res.* 1928. Apr. Vol. 15. No. 4. pp. 883–888. With 4 graphs. [9 refs.] [School of Trop. Med., Calcutta.]

The summary and conclusions give an adequate account of this paper.

" (1) A perusal of the literature shows that the action of emetine on the gastro-intestinal tract has not been properly investigated. Discordant views have been expressed regarding the action of this alkaloid on the motility of the gastro-intestinal tract by clinicians as well as by experimental workers. Some believe that emetine is an irritant and that it stimulates the movements of the gut thereby producing diarrhoea, while others say that it inhibits the movements, thus giving rest to the inflamed gut and relieving tenesmus.

" (2) The action of emetine hydrochloride on the digestive ferments has been studied. Even small traces of this salt such as 1 in 200,000 inhibit the action of ptyalin. Peptic digestion is, however, stimulated by concentrations higher than 1 in 2,000 ; weaker solutions have no

effect. Proteolytic and lipolytic digestions are inhibited by concentrations below 1 in 10,000 ; weaker dilutions accelerate these. On the amylolytic digestion the action of the alkaloid is somewhat inhibitory.

" (3) The action of emetine on the movements of the different portions of the alimentary tract both isolated and in situ was studied. A technique was specially devised by which simultaneous tracings of the different portions of the alimentary canal in situ could be recorded after intravenous administration of emetine. By both these methods it has been shown that the tone and the movements of the gut are stimulated, the effect being more marked as we pass down from the stomach distally to the colon. [The colon is so sensitive that even dilutions higher than 1 in 1,000,000 produce an appreciable effect on its contractions.] The effects produced are due to the action of the alkaloid directly on the musculature of the tract and not through the nervous mechanism.

" (4) The effect of the alkaloid on the vascularity of the gut is to increase it ; after injections of emetine the blood appears to accumulate in the splanchnic area and the influx of the areas, affected by *Entamoeba histolytica,* by blood charged with the alkaloid would be a factor in curing the disease. The volume of the spleen is increased and its automatic movements are stimulated."

A. G. B.

Berman (Phoebus) & Leake (William H.). **Emetin—its Effect on the Rabbit's Heart. Research Prize Essay—1928.**—*California & Western Med.* 1928. June. Vol. 28. No. 6. pp. 772–776. With 9 text figs. [5 refs.] [General Hosp., Los Angeles.]

This is an electrocardiographic study which gained a prize of 150 dollars. Some of the conclusions reached are that emetine hydrochloride given intravenously to rabbits in doses between 1 and 2 mgm. per pound body-weight produces ventricular tachycardia, which reverts to a normal rhythm in 10 minutes ; that the intravenous M.L.D. is about 2 mgm. per lb. body-weight ; that a lethal dose produces ventricular fibrillation from which recovery did not take place ; that daily intravenous injections of 1 mgm. per lb. body-weight produced no marked electrocardiographic changes after 18 mgm. and 28 mgm. had been received.

A. G. B.

Duyster (M.). Giftige Indische Planten. [**Toxic Plants in the Dutch East Indies.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 3. pp. 347–361.

After a short historical review of toxicological work in the D.E.I. the author, a pharmacologist, insists that the use of herbaceous poisons by the natives is not nearly so common as the public is inclined to believe. The majority have no knowledge of this subject ; a few (native healers, drug sellers, etc.) know somewhat (but not much) more. Superstition plays a great part.

The author then quotes in some detail (for which the original paper must be consulted) the toxic action of *Abrus precatorius, Gloriosa superba, Phyllanthus distichus, Datura fastuosa, Dioscorea hirsuta, Manihot utilissima, Pangium edule, Anamirta cocculus, Derris elliptica, Spigelia anthelmia, Cerbera odollam, Plumeria acutifolia.*

W. J. Bais.

CHOPRA (R. N.), GHOSH (S.) & DUTT (A. T.). **Ephedrine from the Indian Varieties of Ephedra.**—*Indian Jl. Med. Res.* 1928. Apr. Vol. 15. No. 4. pp. 889–894. [4 refs.] [School of Trop. Med., Calcutta.]

Under the name Ma Huang ephedra has been in use in China for the last 5,000 years as a diaphoretic, circulatory stimulant, antipyretic, and sedative in cough. The alkaloid ephedrine was isolated in 1887. Lately the alkaloid has been carefully studied at Peking; its action resembles that of adrenaline but is more prolonged, and, unlike adrenaline, it is effective when given by the mouth. It is an excellent cardiac stimulus. Hitherto most of the alkaloid has been obtained from China; the authors sought in India for species of Ephedra containing it. Here is the result of their researches.

"(1) A number of varieties of ephedra grow in India, the common ones being (1) *E. vulgaris*, Rich. (2) *E. pachyclada*, Boiss. also known as *E. intermedia*, Schrenk and Mey. (3) *E. peduncularis*.

"Two other varieties of lesser importance, *E. foliata* and *E. fragilis*, occur in Beluchistan but they are not common.

"(2) Specimens of *E. vulgaris* and *E. pachyclada* or *E. intermedia* were obtained, chemically analysed and physiologically tested. The yield of total alkaloids from the former was 0·92 per cent. and from the latter 1·16 per cent.

"(3) The percentage of ephedrine in the total alkaloids obtained from an average sample of *E. vulgaris* was 71·25, the residue being mostly pseudo-ephedrine.

"(4) The green twigs showed a very much higher alkaloid content than the stem.

"(5) The physiological and clinical reactions of the Indian alkaloid were identical with the alkaloid obtained from the Chinese ephedra."

A. G. B.

CHOPRA (R. N.), GUPTA (J. C.) & GHOSH (N. N.). **Indian Varieties of Aconite: their Chemical Composition and Biological Assay.**—*Indian Jl. Med. Res.* 1928. Apr. Vol. 15. No. 4. pp. 873–882. [11 refs.] [School of Trop. Med., Calcutta.]

Aconite is one of the oldest remedies used by the Hindi and Mohammedan physicians in India and one of the commonest drugs sold. It is largely used as an external application for painful affections; internally it is given for treatment of fever and rheumatism and as a remedy for cough, asthma and snake-bite. Up to the present the Indian aconites have been used only externally, the reason being that they have not been properly standardized. The authors deal here with the assay of specimens of the drug readily available in the Indian market. They discuss the classification of the Indian species as revised by STAPF. They investigated a number of specimens both chemically and biologically. Their conclusions may be summed up thus:—

The common poisonous varieties of aconites on the Indian market are (1) the so-called ferox variety, which is a mixture of two species and sometimes of four; (2) the Indian napellus variety, now known as *A. chasmanthum*, Stapf. The alkaloid content of (1) is, chemically, double that of the European *A. napellus* official in the pharmacopœia and of (2) is ten times as great. Biologically, the ether soluble alkaloid

(pseudoaconitine) of (1) is 1·5 times stronger than aconitine from the European *A. napellus* and the alkaloids of *A. chasmanthum* are 0·7 times weaker. It follows that (1) is three times as strong, and (2) seven times as strong as the European root.

A. G. B.

Eyre (John), Notton (H. E. F.) & Pope (William J.). **Mercurochrome 220 Soluble.**—*Brit. Med. Jl.* 1928. Aug. 11. pp. 238–241. With 7 charts. [7 refs.]

The conclusions of this paper, which deals with the chemistry of mercurochrome 220 and describes tests of different samples and observations on man, are that

" (1) The various specimens of mercurochrome on the market differ markedly in their chemical composition. (2) Toxicity appears to bear a direct relationship to purity of composition. (3) The nearer mercurochrome approximates in its analytical results to its known chemical constitution, the better the preparation as regards therapeutic efficiency and low toxicity."

They suggest that mercurochrome " follows the law of chemotherapy in that it acts only through the body tissues." Controlled experiments on animals have, they write, made it clear that mercurochrome can effect a cure in a considerable proportion of cases.

A. G. B.

Chopra (R. N.), David (J. C.) & Dikshit (B. B.). **A Comparative Study of the Action of Cinchona Alkaloids on the Uterus.**—*Indian Jl. Med. Res.* 1928. Jan. Vol. 15. No. 3. pp. 571–580. With 9 graphs. [13 refs.] [Dept. of Pharmacol., Calcutta School of Trop. Med. & Hyg.]

The summary and conclusions are as follows :—

" 1. The cinchona derivatives show varying degrees of stimulating effects on the uterus of the cat and the guineapig ; the uterus of guineapig is much more sensitive than the uterus of cat. The pH at which maximal results are obtained varies with the uteri of different animals ; the cat's uterus works best at pH 7·6 while the guineapig's uterus acts best at 7·2.

" 2. The dextro-rotatory alkaloids have a more powerful effect on the uterus than the laevo-rotatory ones.

" 3. The most powerful in this series is quinamine of which such high dilutions as 1 in 500,000 cause marked tonic contractions of the isolated virgin, multiparous non-pregnant and the pregnant uterus. 2 to 5 mg. doses given intravenously produce a marked tonic contraction of the intact uterus both pregnant and non-pregnant ; the amplitude of the rhythmic movements is also increased. Next in order may be placed ethyl-hydrocupreidine, iso-octyl hydrocupreine or vuzin and cinchonine, whose activity is about the same. Next comes ethyl-hydrocupreine and then quinine and quinidine, the last two being about equally effective. The least powerful of this series, in the order of their activity, are cinchonidine, iso-heptyl hydrocupreidine and iso-heptyl hydrocupreine ; the action of the last two being slight and inconstant.

" 4. Our experiments show that the oxytocic action of quinine is quite pronounced when the uterus is nearly full term, but in early cases of pregnancy, beyond slightly increasing the amplitude of the automatic movements no untoward effect is likely to be produced. This is also borne out by clinical experience . . . "

A. G. B.

MAYEDA (Seibun). Beiträge zur Erforschung des Wirkungsmechanismus der Chinaalkaloide bei freilebenden Organismen. [**Investigation of the Mode of Action of the Cinchona Alkaloids on Free-living Organisms.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Vol. 32. No. 3. pp. 5–30 [129–154]. With 6 text figs. [32 refs.]

Many observers have recorded that the salts of physiologically active bases are potentiated by alkali, and, especially in the case of local anaesthetics, explanations of this action have been given. Some references to papers on this subject in German journals are given in the memoir now under review, but other relevant papers are the following :

J. RÉGNIER, *Bull. des Sci. Pharmacol.*, 1924, Vol. 31, p. 513 ; 1925, Vol. 32, pp. 271, 513 : J. W. TREVAN and E. BOOCK, *Brit. Journ. Exp. Path.*, 1927, Vol. 8, p. 307 ; H. W. ACTON, this *Bulletin*, Vol. 19, p. 103, and T. A. HENRY and H. C. BROWN, *ibid.*, Vol. 20, p. 782.

The author has studied the toxicity of quinine and a series of its derivatives, in solutions of varying pH, on *Colpidium colpoda*, the toxicity being measured by the time (y, in minutes) required to kill the infusoria by a solution of the alkaloidal monohydrochloride of known strength, maintained at a definite hydrogen-ion concentration (x) by addition of Sörensen's phosphate mixture as a buffer. The results can be expressed in the form of activity curves by plotting times against pH for each concentration of alkaloid ($^{M}/2{,}000$ to $^{M}/200$) and these curves conform with the general formula $y=ax^{n}$, where x and y have the signification mentioned above and a and n are constants for the alkaloid at a particular concentration. In general n falls with the toxicity effect, implying that the toxicity is less dependent on pH at lower than at higher concentrations and that it is the base itself and not the ions or the salt which is active. Among the seven alkaloids examined, quinine and hydroquinine are most affected by variation in pH, quinethyline and deoxyquinine less and optoquine, eucupine and quinicine (quinatoxine) least. In general the toxicity increases by 20 to 30 per cent. for each rise of 0·2 in pH being at a maximum at pH=8·0, and the author suggests this should be taken into account into using quinine or its derivatives locally, though he points out the difficulty in doing this since the acid salts are the more soluble and only dilute solutions are obtainable at a pH of 7·4 to 8·0. He considers that a preparation is needed with a low dissociation constant to ensure as complete dissociation into base as possible in solution. The activity curves resemble very closely dissociation curves for weak bases combined with strong acids, and run parallel with those obtained by plotting surface tension against pH. From a consideration of all the results, the author considers that the toxicity of this group of alkaloids to infusoria depends upon (1) the presence of the free base produced by dissociation of the salt, (2) adsorption of this free base by the organism, and (3) the action of a toxophore group in the adsorbed base upon some component of the organism.

T. A. Henry.

GIBBS (O. S.). **On the Adsorption of Quinine by Blood Cells.**—*Jl. Pharm. & Experim. Therap.* 1928. June. Vol. 33. No. 2. pp. 185–190. [8 refs.] [Pharmacol. Dept., Dalhousie Univ., Halifax, Nova Scotia.]

The author has investigated the distribution, between blood cells and serum, which ensues when neutral quinine hydrochloride is added to rabbits' blood, using for this purpose the method originated by RAMSDEN and LIPKIN (this *Bulletin*, Vol. 12, p. 342) but modified in details on the lines already adopted by KING and ACTON (*Biochem. J.*, 1921, Vol. 15, p. 53), whose observations on the process are confirmed. The author's conclusions are that under the conditions observed in his experiments, distribution is approximately equal between the cells and the serum, the divergences from equality being small and occurring on either side. The alkaloid is probably adsorbed and this adsorptive property of quinine, already observed by many authors, is of great importance not only in affecting its distribution in colloidal media, but also in introducing errors in methods for ascertaining this distribution.

T. A. Henry.

BANERJI (Binode Krishna). **Quinine Intolerance.**—*Indian Med. Gaz.* 1928. Sept. Vol. 63. No. 9. p. 533.

Two cases in which a small dose of quinine or cinchona caused skin irritation, urticaria, oedema and other symptoms. The intolerance was overcome by cinchona febrifuge, starting with 1/8 grain doses and working up to 2½ grains 4 times daily.

A. G. B.

i. SCHMIDT (Hans). **The Pentavalent Antimony Compounds in Tropical Medicine.**—*Indian Med. Gaz.* 1928. Nov. Vol. 63. No. 11. pp. 643–650. [76 refs.]

ii. GHOSH (Sudhamoy), CHOPRA (R. N.) & CHATTERJEE (Nihar Ranjan). **Urea-Stibamine: its Preparation and Composition.**—*Indian Jl. Med. Res.* 1928. Oct. Vol. 16. No. 2. pp. 461–468. [4 refs.] [Calcutta School of Trop. Med., Calcutta.]

iii. ——. **A Simple Method for the Estimation of Antimony in Organic Antimony Compounds.**—*Ibid.* pp. 457–460. [4 refs.]

i. There has been much activity in the chemical, pharmacological and clinical investigation of the organic compounds of antimony in England, Germany and India since 1910. In this work the special contribution of Dr. Schmidt has been the discovery of the conditions under which the Bart reaction could be applied in the preparation of arylstibinic acids, an important advance which has made it possible to produce commercially the numerous compounds of this type—stibacetin, stibosan, neostibosan, urea-stibamine, neostam, etc.—which have been used so successfully in recent years by NAPIER and others in the treatment of kala azar. Apart from a little further information regarding the production of neostibosan (diethylamine salt of *p*-aminophenylstibinic acid), there is nothing new in the article, which is, however, an excellent summary of the recent history of the therapeutical application of pentavalent antimony compounds.

ii. These compounds are all amorphous and for that reason are not amenable to ordinary chemical processes of purification. The

manufacturer must, therefore, rely on rigid adherence to a process which experience has shown will yield a product of low toxicity and high therapeutic efficiency, as determined by biological tests. It is for this reason that some discussion has taken place regarding (1) the methods of preparation which have been published for urea-stibamine, and (2) the constitution of this interesting example of Indian synthetic drug production (this *Bulletin*, Vol. 22, p. 199). The present authors state that if " the vague and scanty " descriptions given by BRAHMACHARI are followed, a very poor yield is obtained, and they have worked out a process for improving it. Up to the production of *p*-aminophenylstibinic acid the process is essentially that of the von Heyden patents and need not be described. The actual combination of this acid with the urea is the important point and that is achieved as follows : To the acid suspended in a little water, and warmed on a water-bath, about an equal weight of urea is added in small portions with constant stirring until solution is effected, after which the heating is continued for some time, and the solution is finally concentrated to about one-third its volume and allowed to cool. Absolute alcohol is then added to precipitate the urea-stibamine, which is rapidly filtered off with the aid of a pump, washed with cold alcohol and dried in a desiccator over calcium chloride. The yield is given as about 3 gms., presumably from 7·5 gms. of *p*-aminoacetanilide, used as the starting material. The cost is stated to be 7 annas per gm. for materials alone, or 1 rupee per gm., including all overhead charges (labour, etc.), but it is not clear that anything has been allowed in this figure for the inevitable difficulties that arise in transferring a difficult laboratory operation to large scale factory production, or for the high cost of biological control of the finished product, which in Europe at any rate would be provided by any reputable manufacturer. The authors give no analyses which can clearly be assigned to their own product, but they have examined samples of different brands of the drug available in the Indian market, with interesting results, which may be summarized as follows :—

(1) Extraction of five samples to exhaustion with a mixture of equal volumes of ether and absolute alcohol removed 14·4, 53·3, 55·0, 12·0 and 48·0 per cent. of soluble material, mainly urea. The insoluble residues from four of these samples, which should consist of urea-stibamine, contained nitrogen, 4·9, 5·2, 4·58 and 3·69 per cent. and antimony 44·1, 38·93, 36·59, 43·85 per cent. respectively.

(2) Estimations of the amount of urea present in seven samples of urea-stibamine by the hypobromite method gave 6·15, 58·56, 50·03, 8·6, 47·29, 9·3, 47·17 per cent. respectively. The total nitrogen, determined by combustion, in four samples varied from 5·77 to 26·23 per cent.

(3) The antimony content in 13 different samples determined by Ghosh's method (*see below*) varied from 19·88 to 43·59 per cent. For comparison with these figures it may be added that Brahmachari's formula for urea-stibamine, $C_7H_{12}O_4N_3Sb$, requires the absence of free urea and the presence of nitrogen 13·0 per cent. and antimony 37·6 per cent.

The authors suggest that in view of the great variation in composition disclosed by the results of their examination of commercial samples, a standard should be laid down for maximum and minimum content of antimony in the various brands of urea-stibamine on the Indian market.

In compounds of this type the results of chemical analysis are only

of value as a means of indicating carelessness in manufacture or gross adulteration, and these interesting results would have been greatly enhanced in value by the addition of toxicity and therapeutic efficiency tests of the various samples.

iii. The method used is essentially that of NORTON & KOCH as modified by EWINS, which it has been found possible to simplify still further by the use of not more than 0·05 to 0·07 gm. of the substance to be analysed. This quantity is digested with sulphuric acid and potassium sulphate, with all the precautions observed in the similar stage of a Kjeldahl estimation of nitrogen. The colourless residual liquid is diluted, boiled to eliminate any sulphur dioxide, mixed while still warm with 3 to 4 cc. of hydrochloric acid, cooled to room temperature and diluted to 100 cc. in a measuring flask. Twenty-five cc. of the liquid are made faintly alkaline by dropping in 40 per cent. caustic soda solution, then rendered acid with tartaric acid and finally slightly alkaline with sodium bicarbonate. The liquid so prepared is titrated with N/100 iodine solution, using starch as indicator. The iodine solution should be standardized periodically against pure tartar emetic (0·00166 gm.=1 cc. of N/100 iodine).

T. A. Henry.

CHOPRA (R. N.), GUPTA (J. C.) & CHOUDHURY (S. G.). **Action of Antimony Compounds on the Adrenals.**—*Indian Jl. Med. Res.* 1928. Oct. Vol. 16. No. 2. pp. 441–446. [4 refs.] [Calcutta School of Trop. Med. & Hyg., Calcutta.]

This action was considered important because in kala azar there is a marked degree of hypo-adrenia and antimony compounds are of benefit. The authors' summary and conclusions are as follows :—

" The experiments on Belgian hare rabbits show that after intravenous injections of organic compounds of antimony, there is a definite increase in the residual epinephrine content of the gland as compared with the normal gland. After the first 2 or 3 injections the increase is slight, but after a larger number of injections the increase is definite and marked. After 10 injections the adrenaline content is nearly doubled."

A. G. B.

GOIFFON (R.). La thérapeutique intestinale par médicaments adsorbés. [**Intestinal Therapeusis by Adsorbed Drugs.**]—*Paris Méd.* 1928. May 26. No. 21. pp. 481–483. [2 refs.]

Two years ago the author reported on the happy effects in spasmodic colic of atropin fixed on charcoal, and more recently BLUM has described other applications of the same principle. This is that charcoal in contact with certain gaseous or soluble bodies fixes them by adsorption, like a dye, but in contact with bodies which lower surface tension the fixed substance is gradually given up. The author has used emetine in this way, 3 teaspoons of charcoal containing 5 cgm. daily, and gives a short account of one chronic case of amoebiasis so treated. Arsenobenzol also is employed thus, 0·05 gm. per teaspoonful of char. coal. Two teaspoons per day may be given for a long time. One thus secures its local without its general effect. Cases of flagellate diarrhoea and diarrhoea associated with the presence of spirilla have been so treated with success. [Few details are given, and the source of the charcoal is not indicated.]

A. G. B.

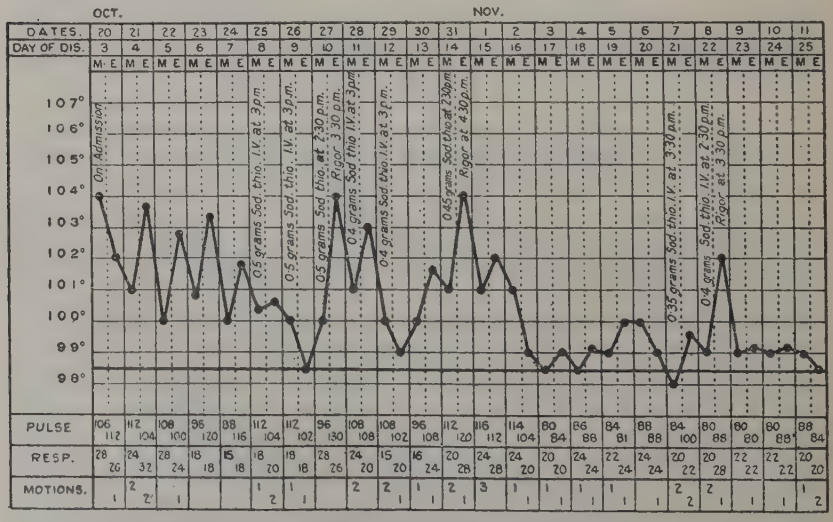
MITRA (A. C.). **Toxic Symptoms following Administration of Carbon Tetrachloride.**—*Indian Med. Gaz.* 1928. Nov. Vol. 63. No. 11. p. 637.

Prisoners of Bihar and Orissa jails are treated on their admission by carbon tetrachloride. Of a batch of 6 prisoners given CCl_4 minims 45, at 7.0 a.m. one, a healthy man of 30, felt nausea an hour later, vomited, and complained of colic. After 20 minutes urticaria appeared till "the whole body was bloated up." By the afternoon he had recovered. Ankylostomes and round worms were present in his stool. Three thousand prisoners have been thus treated with no mishaps but this. It is suggested by MAPLESTONE that the symptoms were due to the presence of ascaris, but he admits the explanation to be incomplete.

A. G. B.

ANNESLEY (F. D.). **A Case of Stovarsol Poisoning.**—*Jl. Roy. Army Med. Corps.* 1928. May. Vol. 50. No. 5. pp. 367–369. With 1 chart in text.

The patient, an Indian doctor aged 30, found he was harbouring cysts of *Entamoeba histolytica* and took stovarsol, 4 grains twice daily for 12 days, and after an interval of 10 days repeated the course, about 200 grains in all. Three weeks later symptoms appeared. When seen a day or two later, October 19, he had a papular, urticaria-like rash on the face, neck and trunk and to a less degree on the extremities, with oedema of face and neck. Papules were present in the mouth and on the palate with much pain on swallowing. The next day the temperature was 104° and the pulse 106. On October 21 the rash was spreading and in places had become vesicular with discharge of serous fluid. On the 23rd it was purpuric on the legs. The patient, who had hitherto negatived the suggestion that it was a drug rash, now admitted the stovarsol. The chart reveals the further course of



Temperature chart relating to first three weeks in hospital of patient with stovarsol poisoning.
[Reproduced from the *Journal of the Royal Army Medical Corps.*]

the case and its treatment. On October 30 large areas of skin on the extremities were about to scale off. By November 30 he had practically recovered. The author notes the late development of symptoms. He cannot explain the origin of the rigors (see chart). He is unaware whether Indians are susceptible to arsenical preparations [see also this *Bulletin*, Vol. 24, p. 672; Vol. 25, p. 414].

A. G. B.

Barlovatz (A.). Cas de mort consécutif à une injection de tryponarsyl. [**Death after an Injection of Tryponarsyl.**]—*Bull. Soc. Path. Exot.* 1928. Mar. 14. Vol. 21. No. 3. p. 211. [Med. Service, "Société de Colonisation Agricole," Mayumbé.]

A native woman, aged 35, was recognized by gland puncture to have trypanosomiasis. Her condition was "médiocre," not bad. Two gm. tryponarsyl (Belgian tryparsamide) was injected into a vein. Two days later there was pronounced jaundice with temperature 38·1° C. and grave general symptoms; after another two days the jaundice was still marked with urine only slightly coloured and not albuminous: the patient was not seen again and died ten days after the injection. Several other persons were treated with the same solution on the same day without mishap. This is the second death in a series of 8,000 injections; the first was that of a baby who probably had an overdose.

A. G. B.

Marquand (G.). Double cas d'asphyxie mortelle causée par du manioc insuffisamment sec. [**Two Cases of Fatal Asphyxia caused by Insufficiently Dry Manioc.**]—*Bull. Soc. Path. Exot.* 1928. Dec. 12. Vol. 21. No. 10. pp. 879–881.

A young Malagasy couple made a pile of fresh manioc in their hut, went to bed and were found dead next morning. Autopsy revealed the signs of asphyxia. White mice in a closed space with such manioc succumbed. It seems uncertain whether HCN played a part as well as CO_2. Ingestion of the manioc did not lead to symptoms of poisoning.

A. G. B.

Peruzzi (Mario). Le cellule a globi jalini in alcune affezioni tropicali. [**Intra-cellular Hyaline Bodies in some Tropical Affections.**]—*Ann. di Med. Nav. e Colon.* 1928. Sept.–Oct. Year 34. Vol. 2. No. 3–4. pp. 173–186. With 19 figs. on 1 plate. [9 refs.]

The bodies to which the author refers have been given various names, such as hyaline degeneration, colloid degeneration, morula cells, Mott's cells, fuchsinophile bodies, Russel bodies, etc., confusion arising from the fact that their nature is undetermined. Peruzzi shows that they are found typically in interstitial connective tissue, but occur also in glandular cells, such as renal epithelium, in molluscum contagiosum, in neoplastic cells, amongst other conditions. The bodies are not, as some have stated, the products of secretion, but are of a degenerative nature, never found, however, in acute pathological processes, only in chronic, and occurring in inflammation of a sclerosing proliferative type, such, for example, as granulomatous conditions and other affections with prolonged course.

H. Harold Scott.

La Rosa (Gaetano). L'agglutinazione aspecifica a mezzo dell'acido lattico, quale criterio per la diagnosi differenziale di alcuni germi simili. [**Non-specific Agglutination by Lactic Acid.**]—*Bol. Instituto Sieroterap. Milanese.* 1928. Apr. Vol. 7. No. 4. pp. 177–185. [14 refs.] French summary p. 185. [Inst. of Hyg. & Bact., Univ., Catania.]

References to the use of lactic acid for the differentiation of allied organisms by non-specific agglutination will be found in this *Bulletin* —Trentini, 1926, p. 729; Vercellana & Zanzucchi, 1926, p. 729; Vercellana, 1927, p. 47; Favilli, 1927, p. 113; Beguet, 1927, pp. 114, 617; Cerrutti, 1927, p. 118; Graziosi, 1927, p. 616.

The author finds: (1) That no reliance can be placed on lactic acid agglutination for the differentiation of cholera from cholera-like vibrios; (2) that, as has already been shown for *Br. melitensis* and *Br. abortus*, this reaction does not suffice to separate the intestinal organisms (colon, dysentery, typhoid and paratyphoid); (3) that agglutination with peptone and thermoagglutination are equally unsatisfactory; (4) that, as Béguet has shown, the lactic acid reaction is common to all acids which have the power of agglutinating *Br. melitensis* and other organisms producing "flocculable substance."

W. F. Harvey.

Alessandrini (A.) & Pampana (E. J.). Sur la culture des héliconèmes *vincenti*. [**Cultivation of "Heliconema vincenti."**]—*C.R. Soc. Biol.* 1928. May 21. Vol. 98. No. 16. pp. 1383–1387. With 1 text fig. [1 ref.] [Hyg. Inst., Univ., Rome.]

Fusiform bacilli are not easy to grow or to maintain alive. The authors' medium is prepared as follows:—

(1) Leave 500 gm. minced beef in the ice chest for 24 hrs. (2) Grind up the beef finely with sand and add 1,000 cc. water. (3) Leave at room temperature for 6 to 8 hrs.; filter through cotton wool and then through paper. (4) Add to the filtrate 1 per cent. pure medicinal peptone and 0·5 per cent. salt, allowing them to dissolve without heat. (5) Dilute this nutrient medium with water to specific gravity 1,007 at 15° C. and adjust reaction to pH 6·8. (6) Filter immediately through Berkfeld N candle. (7) Distribute the ruby red fluid in test tubes.

At room temperature this medium remains unaltered; at 37° C. it becomes turbid in 12–18 hrs., and yellowish. If, however, the original red colour persists, it should be looked on as contaminated. When the spirochaetal form of "Heliconema vincenti" is sown in this medium and incubated for 24 to 48 hrs. at 37° C., a growth will be obtained, consisting of short spirochaetal forms of definitely vibrio or spiral type with tapering ends and also longer forms with as many as 34 turns or more to the spiral. By the 6th or 7th day short forms predominate; they have lost their spiral character, are straight and, with their tapering ends, are exactly like the fusiform bacillus. During growth the medium undergoes changes of colour. It is not specific for "Heliconema vincenti." In it *Vibrio finkler-prior* loses its vibrio form and becomes fusiform.

W. F. Harvey.

Alessandrini (A.) & Pampana (E. J.). Richerche sulla morfologia e biologia dell'*Heliconema vincenti* Sanarelli. [**Morphology and Biology of *Heliconema vincenti* Sanarelli.**]—*Ann. d'Igiene.* 1928. Nov. Vol. 38. No. 11. pp. 881–927. With 14 figs. on 2 plates. [29 refs.] [Hyg. Inst., Univ., Rome.]

The supposed symbiosis of spirochaetes and fusiform bacilli, the organisms associated with Vincent's angina, was first given a satisfactory explanation by Sanarelli. He showed that the fusiform and spirillar forms were one and the same species of organism and that the former were derived from the latter. The name that has been given to the organism is *Heliconema vincenti*. Four strains were available for study, three new strains derived from the liver of a rabbit, the heart blood of a guineapig and the liver of a new-born dog respectively, and the fourth an old strain. Cultivation of these on various media has been tried but with indifferent success. Broth filtrates, too, of cultures of various bacteria were used for cultivation, and it was in such a filtrate of a *B. mesentericus* culture that Sanarelli obtained the transformation of spirochaetal forms into fusiform. The most favourable filtrates for growth are obtained from cultures of *Sarcina aurantiaca* and *Aspergillus niger*. A new medium No. 1 (see above) is described for culture which has proved satisfactory. An important modification of this medium is one in which peptone and salt are omitted—medium No. 2. Medium No. 1 favours the transformation of spirochaete forms into fusiform and sometimes the latter into the former, while medium No. 2 preserves the spirochatal type without change. The behaviour of *Vibrio finkler-prior* in medium No. 1 was surprising, for an examination of the pellicle showed the presence of fusiform bacilli instead of the ordinary comma forms.

Various characters of the new organism were worked out in detail, such as the effect of oxygen, optimum incubation temperature, thermal death point, fermentation of sugars, indol and gas production, etc. The question arises in what group or family of organisms *H. vincenti* is to be placed. It is an extraordinarily pleomorphic organism. The *Spirillaceae* are typical vibrios as young forms, have rigid spirals and are provided with cilia. One member of this family, the Finkler-Prior vibrio, can change to fusiform type. But in spite of this fact, *H. vincenti* cannot be included in the *Spirillaceae*. Having non-rigid spirals and terminal filament instead of cilia it has affinities with the *Spirochaetaceae*, but is excluded from that family on account of its pleomorphism. None of the spirochaetes show fusiform development. Therefore the authors create the new family *Heliconemaceae* into which to place the genus *Heliconema*.

W. F. Harvey.

James (W. M.). **Notes on a Microscopical Equipment for Use in the Tropics.**—*Sixteenth Ann. Rep. Med. Dept. United Fruit Company Boston, Mass.* 1927. pp. 267–272.

These notes are as applicable to microscopical equipment in any part of the world as in the Tropics. Some of the recommendations are—the binocular tube for interchange with the monocular; the purchase of fluorite objectives, at little additional cost, instead of achromatic; the preference of a 1-10th. fluorite oil immersion for the 12th; the use of a thin piece of " daylight " glass to modify the

light from the frosted electric light bulb; a centring achromatic substage condenser in place of the ordinary Abbe; a source of light which should be sufficiently intense and which is to be modified by appropriate light filters; a dark field condenser which is easily attached, centred and removed.

An extremely useful objective is an apochromatic 8 mm. or 1-3 rd, with N.A. 0·60 to 0·65. "With a low power eyepiece it will do the work of a 16 mm. objective and with eyepieces 10x and 15x it will show as much as will the ordinary 4 mm. or 1-6th. Its N.A. is as high as that obtained in practice with a 4 mm. of 0·85, since this latter objective can be rarely used at full aperture." With a central stop in the substage carrier it gives, with a good condenser, an excellent dark field and there is no necessity to change to a special condenser. Again the fluorite 3 mm. or 1–10th oil immersion objective, which has an initial magnification of about 72 and N.A. 1.30 suffices for the most critical work in medicine and biology. It can be used with eyepieces of 20x and 25x and will work through the thickest No. 2 coverglasses.

W. F. Harvey.

Sechi (Elio). Sulla sopravvivenza di alcuni batteri asporigeni in tubi chiusi alla fiamma. [**Duration of Life of Sealed Cultures of Asporogenous Bacteria.**]—*Pathologica.* 1928. July 15. Vol. 20. No. 441. pp. 361–363. [18 refs.] [Inst. of Path., Univ., Cagliari.]

The strains of organisms studied had been sown on ordinary peptone agar, made with Liebig's extract and the culture tubes sealed in the flame after 48 hours' incubation. They were kept protected from light. The organisms which were still alive and had preserved their cultural and serological characters after about 4 years were, one strain of *Corynebacterium diphtheriae*, one of *Past. pestis*, one of *Bact. dysenteriae* (Shiga) and one of *Br. melitensis B.* One strain of *Br. melitensis B* had preserved also its pathogenic properties. Seven strains of *Br. melitensis* and five of *Br. abortus* failed to grow.

W. F. Harvey.

Maxwell (James L.). **The Question of Bilivaccines.**—*China Med. Jl.* 1928. Sept. Vol. 42. No. 9. pp. 682–692.

The writer referred the question of the utility of bilivaccines to authorities in Great Britain and America. Their replies are distinctly non-committal or adverse. Most of the article, however, consists of evidence of a more positive character, obtained from South Africa and from the document of the League of Nations, Health Organization (C.H.662) on this subject (see this *Bulletin*, 1928, p. 312).

W. F. Harvey.

Shaxby (J. H.) & Bonnell (H. E.). **On Skin Colour.**—*Man.* 1928. Apr. Vol. 28. No. 4. pp. 60–64. With 3 text figs.

The general purpose of the investigation described in this paper was to obtain quantitative measures of the differences between the colour of the skin in different races of mankind. The method was to project light through Wratten filters so that a beam of a definite wavelength was thrown on the skin. The proportion which was reflected was measured with a Trotter photometer. A white surface was substituted for the skin, and this gave the measure of the total

illumination: the proportion reflected being known, the amount absorbed was obtained by subtraction. The authors point that there is an objection to this method; it gives no information about the penetration of the light into the different layers of the skin, and what happens to that portion which penetrates.

Measurements were made on 200 Europeans, 35 negroes, and 32 half-castes. When the skins were studied in white light it was found that the negro reflected 30–40 per cent. of the light which was reflected by the same part of the body of a European. Examinations were also made in approximately monochromatic red and green lights. It is interesting that the proportion of red or green to the total amount affected was roughly the same in negroes and Europeans: it stands to reason that the total amount reflected was less in the negro.

P. A. Buxton.

Kümmell (H.). Yatren 105 in der Verhütung und Behandlung allgemeinerer Magen-Darmbeschwerden in den Tropen. [**Yatren 105 in the Prevention and Treatment of Common Gastro-Intestinal Affections in the Tropics.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. May. Vol. 32. No. 5. pp. 256–261. [1 ref.] [San Antonio Hosp., San Pedro de Macoris, Dominican Republic.]

After 7 months' experience in the West Indies the author finds that in Yatren 105, apart from its well known action in amoebic and bacillary dysentery, we have a universal prophylactic and an excellent specific against all intestinal affection in the tropics. [Readers impressed by this statement will consult his paper.]

A. G. B.

Fischer (Otto). Die Behandlung infektiöser Darmerkrankungen mit "Yatren 105." Sammelbericht nebst neuen eigenen Beobachtungen. [**The Treatment of Infectious Intestinal Diseases with "Yatren 105." A Review.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Apr. Vol. 32. No. 4. pp. 197–212. [139 refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

This review deals comprehensively with the use of Yatren in chronic and acute amoebic dysentery and its complications, in ulcerative colitis, and in other forms of dysentery, such as ciliate, flagellar and bacillary. With its 139 references it is a valuable repository of information.

A. G. B.

Owen (D. Uvedale). **Clinical Notes.**—*Ann. Trop. Med. & Parasit.* 1928. June 12. Vol. 22. No. 1. pp. 47–52. With 3 figs. on 2 plates. [4 refs.]

The author gives a short account of five cases:—

(1) *T. gambiense* infection, of which a good plate illustrates the rash.

(2) Mixed leprosy, with another good photograph.

(3) Schistosomiasis, with reference to the use of periodide of emetine. This drug was used successfully by the mouth by R. M. Gordon in

14 West African children [this *Bulletin*, 1927, p. 178]. The author's patient was a native of Dongola, aet. 21, and the treatment was ineffective.

(4) *Fasciola hepatica* in man, in North Wales. The liver was enlarged and tender, there was mild irregular fever and an eosinophilia of 68 per cent.

(5) A case of sprue in Nigeria. An African origin of sprue is rare.

A. G. B.

PETZETAKIS (M.). L'uréthrite à Pasteurella. [**Urethritis due to a Pasteurella.**]—*Bull. Soc. Path. Exot.* 1928. Dec. 12. Vol. 21. No. 10. pp. 839–841.

Two cases are described from Alexandria in which, together with a purulent urethritis, cystitis and epididymitis, there occurred systemic symptoms. The organism isolated in both these cases from the urethral pus was an ovoid cocco-bacillus with the characters of a pasteurella organism. The author considers that the patients may have been suffering from a general septicaemic condition with urethritis as a simple complication.

W. F. Harvey.

RADSMA (W.) & JOENOES (M. I.). Over de dagelijksche schommelingen van de CO_2-spanning in de alveolairlucht. [**Daily Fluctuations of the CO_2-Tension in the Alveolar Air.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 5 pp. 781–801. With 2 plates. [9 refs.]

Further investigations confirm Radsma's findings (published in the same journal, 1926, v. 66, p. 95) that the CO_2-tension in the alveolar air falls during the morning and rises again 1½–2 hours before sunset, being in all cases much higher at 6 p.m. than in the morning. The reason for this phenomenon is not clear. To determine the influence of sunlight the authors investigated the fluctuations of the CO_2-tension in two persons during an eclipse of the sun and found that in this case the alveolar CO_2-tension did not show the usual drop.

Taking into consideration that basal metabolism rises gradually during the day, while the CO_2-tension falls, the authors thought that the cause of the latter might lie with the increased ventilation of the lungs. This was confirmed by registration of respiratory movements. The basal-metabolism was estimated in five people and found to be lower than the figures given by BENEDIKT which is in accordance with the usual findings in the tropics.

H. Lwow.

RADSMA (W.). De spanning van het koolzuur in de longlucht bij de bewoners der tropen in vergelijking met die van Europa. [**The CO_2-Tension in the Pulmonary Air in the Tropics and in Europe.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 5 pp. 802–819. With 10 charts (1 on plate). [16 refs.]

The author studied on himself the CO_2-tension in the alveolar air in Java and in Holland and found that the typical daily fluctuations

noticed in the tropics (see previous article) did not occur in Holland. He also found in three other persons that the alveolar CO_2-tension was markedly higher in Holland than in Batavia. While the average alveolar CO_2-tension in the tropics shows 36·7 mm. Hg., in Europe the average CO_2-tension is 39 mm. Hg.

H. Lwow.

Ermilova (E.) & Kruchkova (E.). Propriétés biologiques des vibrions isolés de l'eau de Volga, de conduite et des égouts. [**Vibrios of Volga Water.**]—*Rev. Microbiol. et Epidémiol.* 1928. Vol. 7. No. 2. French summary pp. 228–229. [In Russian pp. 172–175. 5 refs.] [Bact. Lab., Stalingrad.]

The strains isolated are capable of division into 5 groups.

1. V. alcaligenes.—Motile, curved bacilli, Gram-negative; turning Barsiekow's medium blue in 6 to 11 days; not coagulating milk; not liquefying gelatin nor inspissated serum; non-haemolytic; not producing indole; not agglutinated by Bacillus faecalis alkaligenes serum nor by cholera serum.

2. Inactive vibrio (Maslennikova).—Small, motile, curved bacilli, Gram-negative; not changing the colour of Barsiekow's medium; not coagulating milk; not liquefying gelatin nor inspissated serum; not haemolysing dog and rabbit erythrocytes; not having any denitrifying action; not pathogenic for mice.

3. V. paracholerae.—Motile curved bacilli, Gram-negative; turning Barsiekow's medium red; coagulating and turning litmus milk red; liquefying inspissated serum; some strains haemolysing sheep erythrocytes; giving positive nitroso-indole reaction; not agglutinable by cholera serum; some pathogenic for mice.

4. B. aquatilis communis.—Motile, curved bacilli, Gram-negative; turning Barsiekow's medium which contains mannite or glucose, red in 24 hrs., but leaving lactose unaffected; most strains coagulating milk; liquefying gelatin and inspissated serum; giving positive nitroso-indole reaction.

5. B. alcaligenes.—Motile curved bacilli, Gram-negative; producing alkali; some strains agglutinated, but below titre, by serum of *Bact. faecalis alkaligenes* while the majority are not agglutinated.

W. F. Harvey.

Levaditi (C.), Anderson (T. E.) & Manin (Y.). Le rôle du glutathion dans la production du trypanotoxyl et du bismoxyl. [**The Rôle of Glutathione in the Production of Trypanotoxyl and Bismoxyl.**]—*Bull. Soc. Path. Exot.* 1928. Oct. 10. Vol. 21. No. 8. pp. 676–687. [15 refs.]

Levaditi and his colleagues have already suggested that the mechanism by which pentavalent arsenical compounds, such as atoxyl and tryparsamide, and the various bismuth drugs become parasiticidal *in vivo*, is due to the formation of metallo-protein derivatives, to which they have given the names trypanotoxyl and bismoxyl respectively,

It is now believed that glutathione takes some part in bringing about this change and in support of that view it is shown that reduced glutathione is capable of rendering sodium potassium bismuthyl tartrate active *in vitro* against *Spirochaeta gallinarum* and that the power of extracts of liver, kidney, muscle, blood, etc., to activate similarly, arsenical and bismuth compounds is proportional to the amount of glutathione in the extracts, though this relationship is neither absolute nor constant: there is, for example, a greater difference in the glutathione content of liver and striated muscle, than there is between their powers of activation. On the latter ground it is argued that there must be a second factor operating in addition to glutathione and in support of this it is shown that only a small amount of glutathione disappears in presence of the metallic compound, and that tissues still retain some activity, particularly for the transformation of atoxyl into trypanotoxyl, after removal of the whole of their glutathione by extraction with trichloroacetic acid. Further, blood which is poor in glutathione (19 to 28 mgm. per 100 grammes) activates atoxyl markedly, but scarcely activates sodium potassium bismuthyl tartrate. This second factor in blood appears to be absent from the serum, and to be equally divided between the stromas and the haemoglobin. The latter is equally potent after desiccation and re-solution in saline and still shows activity after precipitation by alcohol.

Finally, an attempt is made to link up these observations with those of Voegtlin and his collaborators, who explained the transformation of arsenobenzene into an actively parasiticidal substance in the body by the formation, after a period of incubation, of the corresponding arsenoxide. The present authors suggest that the final trypanocidal activity depends on the equilibrium reached between the two processes—conversion of the arsinic acid into arsenoxide and reduction of the latter—brought about by glutathione. Further, where activation occurs arsenoxide is either present in sufficient quantity not to be rendered completely inactive by the further action of glutathione, or is protected from the latter by the formation of trypanotoxyl, which on assimilation by the trypanosomes is dissociated, liberating the arsenoxide, which possibly kills them by " blocking " their glutathione.

T. A. Henry.

Hance (J. B.) & Pershad (Joti). **On Ether by the Open Method as the Anaesthetic of Choice in Indian Conditions.**—*Indian Med. Gaz.* 1928. Sept. Vol. 63. No. 9. pp. 512–519. With 1 text fig.

The authors, who write from Jodhpur, reach the conclusion that administration of open ether is quite practicable, even in the Indian hot weather, that its properties make it the anaesthetic of choice where its use is not contra-indicated and that the contra-indications are identical with those in temperate climates. Thirteen tables are appended giving details of operations with the quantity of ether used and the temperature of the theatre (often over 90° and in two instances 100° F.).

A. G. B.

Infurna (Giuseppe). Un piccolo focolaio di *latah* in Eritrea. [**A Focus of Latah in Erithraea.**]—*Arch. Ital. Sci. Med. Colon.* 1928. Sept. Vol. 9. No. 9. pp. 560–562. [Inst. of Trop. Path., Univ., Bologna.]

The author having met with a case of latah examined other patients more carefully and found five similarly affected; two of them gave a history extending over ten years.

H. Harold Scott.

Welch (T. B.). **The Abatement of *Aedes taeniorhynchus* at Chacachacare.**—*Jl. Port-of-Spain Med. Soc.* 1927. pp. 121–123. With 1 map.

A short note of successful abatement of a plague of these furious biters. The swarms came on the heels of rain following a long drought and were traced to three ponds close to the shore, slightly below sea level, and with much bush round the margins. Two entomologists demonstrated that the Aedes was not breeding in crab holes. One pond was separated from the nearest house by 1,100 yards and a ridge 300 feet high; neither height nor distance was any barrier to the mosquitoes which were seen to cross the ridge in clouds.

Oil was tried, but wind and the bush prevented its being effective. Dr. Welch formed the opinion that mosquitoes had been absent in the dry season because the water of the ponds had become too saline for their use and that permanent communication with the sea would make effective salinity permanent. Channels were cut and the plague ceased. [Some details of salinity before and after communication with the sea would be interesting. *Aedes taeniorhynchus* can accommodate itself to a wide range of salinity, see Cleare, *Bull. Entomol. Res.*, 1927, Vol. 17, pp. 405–409, who found this mosquito breeding in water of salinity varying from 0·7 gm. to 16·2 gm. per litre in terms of NaCl.]

J. F. C. H.

Milne (C. J.). **On Some Aspects of Rural Sanitation and Hygiene in Trinidad.**—*Jl. Port-of-Spain Med. Soc.* 1927. pp. 100–112.

Dr. Milne's paper has particular reference to Trinidad, but the difficulties there encountered are common to most tropical places. He makes reference to the lack of knowledge of the part played in the West Indies by dietary errors and insufficiencies, but his main theme is that education of the children underlies all successful sanitary work in the tropics. He looks forward to the day when an enlightened administration will make the chief health officer a member of the board of education.

J. F. C. H.

Hanafin (J. B.). **Further Results in Mosquito Proofing Barracks.**—*Jl. Roy. Army Med. Corps.* 1928. Aug. Vol. 51. No. 2. pp. 127–130. With 1 chart.

The notes are in continuation of Munro's paper (this *Bulletin*, 1928, p. 278). The table shows the advantage accruing to the

British infantry after their quarters were screened and a further comparison is possible with the other British units in adjoining barracks who are not so protected. The figures for other fevers are given as evidence that the low figures for malaria are not produced by transferring, to the other-fevers group, cases which would formerly have been called malaria.

Year.	Average strength.	British Infantry. Malaria.		Dengue, sandfly, influenza and fevers of uncertain origin.	
		Admissions.	Ratio per 1,000.	Admissions.	Ratio per 1,000.
1923 ...	588 unproofed	500	850·34	*Nil*	*Nil*
1924 ...	489 ,,	236	482·62	4	8·18
1925 ...	281 ,,	160	569·40	17	60·67
1923 ...	302 proofed	55	182·12	*Nil*	*Nil*
1927 ...	285 ,,	13	45·61	2	7·01

Year.	Average strength.	Other British Units. Malaria.		Dengue, sandfly, influenza and fevers of uncertain origin.	
		Admissions.	Ratio per 1,000.	Admissions.	Ratio per 1,000.
1923 ...	352 unproofed	190	539·77	*Nil*	*Nil*
1924 ...	309 ,,	95	307·44	4	8·18
1925 ...	334 ,,	157	470·06	6	21·35
1926 ...	293 ,,	197	672·35	1	3·31
1927 ...	391 ,,	104	265·98	4	14·03

The results are said to raise the question whether the screening of buildings should not be the chief anti-malaria measure for Europeans in the tropics. [These results should impress the value of screening upon British military authorities. Others have been satisfied on the point for years. Boyd (*Amer. Jl. Trop. Med.*, 1926, Vol. 6, p. 157, summarized in *Bull. of Hyg.*, 1927, Vol. 2, p. 591) has published evidence which refutes the commonly heard statement "no screening is better than poor screening."]

J. F. C. H.

Mühlens (P.). La aplicación del verde de Schweinturt (verde de Paris) en la lucha confra las larvas de los anofeles. [**Paris Green in Anti-larval Work.**]—*Gac. Med. de Caracas.* 1928. Apr. 30. Vol. 35. No. 8. pp. 120–121.

Mühlens summarizes for Venezuelan readers what has recently been written regarding Paris green. He lays stress on the necessity of carefully washing the hands with soap and water after completing work to exclude risk of chronic arsenical poisoning.

C. Lane.

Mertens (W. K.). Mijn ervaring omtrent Stoxal als larvicide middel. [**My Experience of Stoxal as a Larvicide.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 7. pp. 1010–1014. [3 refs.]

The larvicide was used in quantities of 0·01 grams per square metre, either pure or mixed with magnesia or talc in a dilution of 1 : 10. Only when the effect proved insufficient were larger doses employed. But even the tenfold dilution caused a mortality among the larvae (*A. subpictus*) of 25–50 per cent. only. To obtain an equal distribution the undiluted substance could not be used. The larvicide proved non-toxic to fishes even in the ten-fold dose.

N. H. Swellengrebel.

Elvery (P. G. M.). **A New Use for Oil Drums.**—*Jl. Roy. Army Med. Corps.* 1928. Aug. Vol. 51. No. 2. pp. 137–138. With 2 figs.

The title of this paper and the illustrations (see p. 584) tell most of the story. The drums are the ordinary 45-gallon containers. In use as in figure 1, each will boil 40 gal. of water or 519 lb. of potatoes. The rotating dustbin, on being turned over, is self-opening and self-emptying and can be made to tip direct into a sweeper's barrow.

J. F. C. H.

Balfour (Andrew). **The Tropical Field: its Possibilities for Medical Women.**—*Jl. Trop. Med. & Hyg.* 1928. Nov. 1. Vol. 31. No. 21. pp. 273–280.

An admirable address which deserved to be widely read.

A. G. B.

Elkington (J. S. C.). **The Division of Tropical Hygiene. Commonwealth Department of Health.**—*Health.* Melbourne. 1928. July. Vol. 6. No. 4. pp. 100–105.

The account is written by the Director of the Division, which is concerned with the "wider hygienic aspects of tropical Australia." The paper is not suitable for summary, but the following extract teaches a lesson :—

"By a careful series of systematic observations [to determine the unidentified vector of malaria at Rabaul] covering a large number of feeding observations and dissections, Dr. Heydon, medical officer in charge of the Commonwealth Laboratory, was able early in 1923 to incriminate definitely *Anopheles punctulatus* Donitz, of which the variety *moluccensis* Swellengrebel is the common local form. Dr. Heydon also located all local breeding

Fig. 1. Three boilers made from oil drums for troops' kitchen at Karachi.

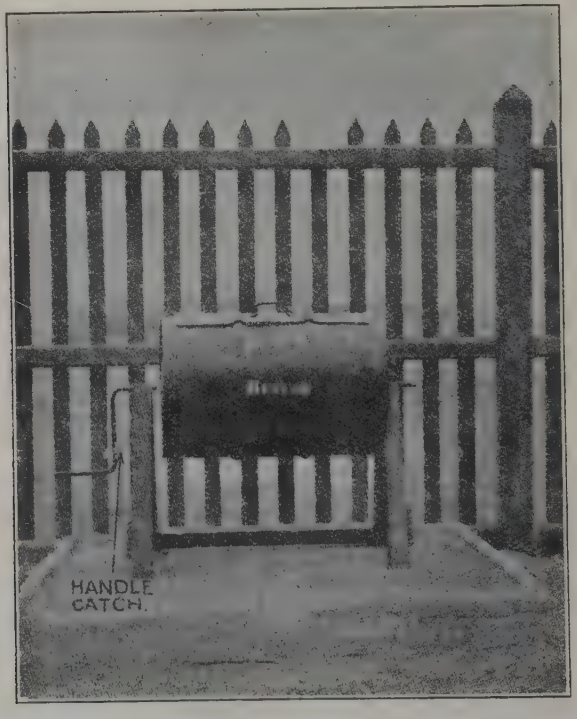


Fig. 2. Self-cleaning and self-emptying dustbin made from an oil drum. By lifting up the handle catch and rotating the drum the lid opens and the contents are emptied.

[Reproduced from the *Journal of the Royal Army Medical Corps.*]

places of this species and worked out its life history. From being an unsolved mystery the control of indigenous malaria in Rabaul was thus reduced to a simple question of minor drainage and a few pounds' worth of labour and kerosene annually."

A. G. B.

CILENTO (R. W.). **The Australian Institute of Tropical Medicine, Townsville, North Queensland.**—*Health.* Melbourne. 1928. July. Vol. 6. No. 4. pp. 106–111.

The history of the Australian Institute of Tropical Medicine since its foundation in 1910 (?) to date is of interest. At first it was administratively under the University of Sydney. In 1911 the Commonwealth took over financial control, retaining the University representatives as scientific advisers, and new buildings were opened in 1913. In 1921 administrative control passed from the Department of External Affairs to the newly created Department of Health of the Commonwealth. Hitherto it had been a research institute ; now, on the advice of Dr. HEISER of the International Health Board, it became a central laboratory and administrative headquarters for dealing with the chief health problems of tropical Australia and dependencies. " As the more routine laboratory services and special field investigations developed important and definite research problems, Dr. Heiser wrote, they should be taken up by qualified persons attached to the staff." Some of the more important abstract research problems might be transferred to the universities. The author and present director took office in October 1922. The programme then laid down is given and an outline of the subsequent activities.

A. G. B.

PAMPANA (Emilio J.). La medicina tropicale nella Columbia occidentale. [**Tropical Medicine in Western Colombia.**]—*Arch. Ital. Sci. Med. Colon.* 1928. Vol. 9. No. 8. 23 pp. With 1 text fig. [18 refs.]

A few of the prevailing diseases are dealt with in this article, namely, malaria, yaws, relapsing fever, helminthiasis, and some cutaneous affections.

Malaria. The splenic index is high, 66·4 per cent. of the whole population and 35 per cent. of children in Chocò. Of 3,125 cases examined, 62·37 per cent. were subtertian, 26·55 per cent. benign tertian, and 4·54 mixed, 3·94 quartan ; the remaining 2·6 per cent. were undetermined. Blackwater fever is infrequent, but the few cases which do occur are said to be very grave. Three species of Anopheles are found—*A. tarsimaculatus*, *A. albimanus*, and one " intermediate between *A. hylephilus* and *A. neivai*." Paris green could not be used for extermination because of the difficulty of obtaining a dry vehicle in so damp a climate. The chief means of dealing with the menace is by " bonification."

Yaws is common, syphilis is rare. The author has seen only one case of goundou ; gangosa is more frequent and goes by the name of " bubòn de Belez." Ticks, *O. talaje* and *O. venezuelensis*, are believed to carry infection. Relapsing fever with the same vectors is fairly common also.

Faecal examination of 336 individuals showed that the chief helminth infections were Trichuris (66·9 per cent.), Ancylostoma (61), Ascaris

(57·6); multiple infection was common, all three being found in 32 per cent. of cases. *Entamoeba histolytica* was found in 26 per cent. and Balantidium in 1·5 per cent. Beriberi and pellagra, though they exist, are very rarely seen, the latter in the interior of the country. Other conditions present which receive passing mention are pinta, piedra, mango toe, sporotrichosis and mossy foot. Cases of elephantiasis are usually introduced; the author has met with only one patient in whose blood he found filarial embryos. [*Cf.* WESTPHAL, this *Bulletin*, Vol. 24, p. 56.]

H. Harold Scott.

FERNÓS ISERN (A.). **Infantile Morbidity and Mortality in Porto Rico.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. May. Vol. 3. No. 11. pp. 461–467. With 1 text fig.

Of 39,376 infant deaths which occurred in Porto Rico during 1922–27 31 per cent. were attributed to diarrhoea and enteritis, 18 per cent. to respiratory diseases and 17 per cent. to congenital debility; tetanus neonatorum accounted for 6 per cent. and malaria for 3 per cent. The author is "forced to conclude that the dietetic regime in infancy is fundamentally wrong among the large majority of the Porto Rican people," and this belief is strengthened by a comparison of the mortality distribution within the first year of life with that of New York.

Age groups.	Relative mortality 1924.	
	New York.	Porto Rico.
Under one day	25·7	4·53
One day and under one week	19·4	9·88
One week and under one month	13·4	14·71
One month and under six months	13·9	41·34
Six months and under one year	27·6	29·54
Total	100	100

In Porto Rico the chief incidence of infant deaths is after the first month of life, i.e., when artificial feeding comes into use.

A. G. B.

LAMBERT (Robert A.). **School of Tropical Medicine of the University of Porto Rico under the Auspices of Columbia University. Review of Research carried out in First Two Years 1926-1928.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Sept. Vol. 4. No. 3. pp. 107–116.

The diseases which have been the chief subjects of research are sprue, schistosomiasis, filariasis, intestinal infections and tuberculosis. An analysis of the native dietaries is in progress. The author writes:—

"That tuberculosis is responsible for more deaths than any other single infection in many tropical countries is a fact not generally recognized and one whose study has hardly been touched. No better place for its investigation could hardly be found than Porto Rico where the death rate from tuberculosis is some three times as great as that of continental United States, and where the cities show a rate nearly five times that of New York."

The Rickets Commission of Child Welfare of the U.S. Department of Labour made an intensive and sociological investigation which included the physical examination of 700 Porto Rico children, systematic X-ray studies, chemical analyses of blood and investigation of living conditions. The interesting fact was established that in spite of widespread poverty and malnutrition rickets is practically non-existent on the island. A list is given of 61 papers published. [It is interesting to note that in 1922 rickets was given as one of the chief causes of infantile mortality in Porto Rico (this *Bulletin*, Vol. 20, p. 751).]

A. G. B.

Coombs (F. S.). **Some Remarks on Manganese Treatment of Pneumonia.**—*Med. Jl. Australia.* 1928. Aug. 11. 15th Year. Vol. 2. No. 6. pp. 175–177.

The author writes with enthusiasm of this method of treatment of pneumonia. " Here we have a cheap, reliable and easily applied form of therapy which utterly changes the prognosis," but he admits that his experience is limited. The technique is as follows :—

" The solution consists of 0·12 gramme (two grains) of potassium permanganate (pure) dissolved in 568 cubic centimetres (one pint) of water comfortably hot (40·6° C.). If cold, it causes rectal irritation and is not well retained. The solution must be fresh.

" The dosage is from 90 to 300 cubic centimetres (three ounces to ten ounces) according to the age of the patient. The injection is given *per rectum*, slowly, by means of a funnel and tube of small bore, the patient being in dorsal decubitus or on the side with the buttocks raised by a pillow.

" Injections are given every two and a half to four hours for the first twenty-four to thirty-six hours : the interval between injections is judged by the day of disease on which the patient comes under treatment. The earlier the patient is seen, the longer the interval between injections and *vice versa* and again, the less the injections are retained, the more frequently they must be given. Once temperature reaches normality in older children and adults, then give two injections every day for three days and one a day for three more days."

" The results of treatment may be described as follows :

" 1. Breathing becomes easier, deeper and slower in a few hours after the first injection.

" 2. Cough becomes freer, softer, less tearing in character.

" 3. Sputum becomes less tenacious and easier of expectoration in twenty-four to thirty-six hours.

" 4. Cyanosis gives place to a healthier hue.

" 5. Sleeplessness is no longer a worry and sedatives are only rarely needed.

" 6. The rusty sputum is early replaced by a white frothy expectoration, though this may be ushered in by a small haemoptysis, of no ill-omen, though sufficiently alarming if not expected.

" 7. The temperature drops usually within a few hours after the first or second injection and if it does take a few days to reach normal, at any rate it strikes a lower level, with definite decrease in toxicity and great comfort to the patient.

" 8. Appetite returns even before normal temperature."

If the patients are allowed home too soon there is a big risk of relapse. Eight cases out of 19 are described. The potassium permanganate must be chemically pure ; tabloids are suggested. The rationale is uncertain.

A. G. B.

Venezuela Gulf Oil Company. **Hospital of Venezuela Gulf Oil Company. Second Annual Report. 1927.** [Cook (W. W.).]—61 pp. With 1 plate. Maracaibo, Venezuela.

In the report of this Hospital, to which seven medical officers are attached, an account is given of construction work undertaken during the year. There were 1,283 admissions and 16 deaths. There are six articles or reports on tuberculosis, for the use of sufferers, on the feeding of infants in warm countries, on a malarial survey, on the oral administration of antityphoid vaccine and on acute amoebiasis as a complicating factor in acute surgical conditions. The last contains matter of general interest, though the data are not very complete. A number of cases are described, and it is concluded that in a total of 77 cases of appendicitis *Entamoeba histolytica* was found ten times in the appendix and ulcers of dysenteric type 6 times, a total of 16 cases or 20·8 per cent. in which *E. histolytica* was believed to be the cause of the inflammation. The author (W. W. Cook) suggests that bismuth, yatren or emetine should be employed in all abdominal surgical cases without contra-indications, where fever does not promptly subside 36–48 hours after operation. The diseases treated are classified and a laboratory report shows microscopical and serological activity.

A. G. B.

Wupperman (R. C.). **A Review of Twelve Months Surgical Work at the Colonial Hospital, Port-of-Spain.**—*Jl. Port-of-Spain Med. Soc.* 1927. pp. 19–28.

The author dealt with abdominal and pelvic surgery.

A. G. B.

Martini (E.). Betrachtungen zur Epidemiologie der Malaria und der Syphilis. [**Epidemiology of Malaria and Syphilis.**]—*Dermat. Woch.* 1928. May 12. Vol. 86. No. 19. pp. 640–643.

The author first suggests that the rate of increase of the proportion of infected persons in a population may be represented by the expression $au\,(1-u)-qu$, where u is the proportion actually infected (presumably at time t), a a constant measuring the "infectiousness" of the disease and q another constant measuring the reversion rate from the infected to the uninfected state. He remarks that when the rate of increase is zero, *i.e.*, the proportion of infected persons constant, $1-u=q/a$ ($u=0$ would also satisfy the conditions). He continues—"it therefore follows that when there are only 50 per cent. unaffected a reduction to one-half of the mean duration of sickness (infection) must lead to 100 per cent. of healthy persons or the disappearance of the disease. If 80 per cent. were healthy a reduction to 4/5th of the mean duration of sickness would suffice to reach the goal." Hence it would appear that "an intensive endemic is extremely stable and hard to reduce, while an endemic affecting only a small proportion of the population must be extinguished by a slight variation of the conditions which is unfavourable to it." As this, however, does not seem to be in accord with facts, the author discusses possible explanations. [Another possible explanation is that the author has altogether misunderstood the mathematical writings of Sir Ronald Ross which he cites—without

exact reference. It is undoubtedly true that 50 must be multiplied by 2 to turn it into 100, while it suffices to multiply 80 by 5/4 to reach the same answer. But it is not true that these arithmetical operations throw any light at all upon what happens when we vary the parameters of the integral of $du/dt = au(1-u) - qu$. The author should, before embarking upon further quantitative epidemiological voyages, make a more detailed study of the papers of Sir Ronald Ross and Dr. Hilda Hudson.*]

M. Greenwood.

van Steenis (P. B.). Pyomyositis tropica. (Voorloopige mededeeling). [**Tropical Pyomyositis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 4. pp. 533–546. With 2 charts. [10 refs.] [Military Med. Lab., Weltevreden.]

The author describes as a clinical entity, with report of 4 cases, an acute febrile disease, in the clinical picture of which inflammation of the muscles, either single or multiple, predominates. Early in the course of the disease abscess occurs, in the pus of which common staphylococci are found besides a gram-negative coccobacillus. In cultures made from the pus the latter is invariably overgrown by the staphylococcus. Rabbits injected with the pus sometimes became ill and died. Two strains of the gram-negative coccobacillus could be obtained from the organs of these rabbits. Their cultural properties are described in tabular form. Blood cultures from the patients remained sterile and the blood was not infectious for rabbits either. The coccobacillus is not agglutinated by the patients' serum. Various authors are quoted, who describe the occurrence of the same disease in Tonkin, West and Central Africa and British Guiana. [The reviewer saw at least 12 cases of this disease in Sumatra.]

W. J. Bais.

Mesnard (J.). Le typhus exanthématique au Tonkin. [**Typhus Fever in Tonkin.**]—*Arch. Inst. Pasteur d'Indochine.* 1928. Apr. No. 7. pp. 3–19. With 12 charts & 1 map. [8 refs.] [Summary appears also in *Bulletin of Hygiene.*]

The presence of typhus in Annam was first reported by Yersin and Vassal in 1908. After exclusion of malaria, enteric, kala azar and dengue the diagnosis was based on the cyclical character of the temperature, conjunctival injection and transmissibility to man by the patient's blood after an incubation period of 14–21 days.

In July, 1921, Coppin described an epidemic in the prison at Hainoi resembling typhus with a mortality of 16 per cent. Since then the diagnosis of typhus seems to have been excluded in Tonkin, although the cold season gave rise to an outbreak of cases of undetermined fever every year. A laboratory examination, consisting in inoculation of guineapigs and the Weil-Felix reaction, instigated by an epidemic which occurred in the Central prison at Hainoi in March, 1926, led to the conclusion that the outbreak was one of typhus.

Systematic investigation of sporadic cases which was continued for the rest of the year and during 1927 revealed the presence of 96 cases

* *Proc. Roy. Society*, Series A, xcii, 1915. p. 204, xciii, 1916. p. 212 and p. 225.

of typhus among the Annamites and 14 cases among the Europeans. With the exception of 5 children, 2 of whom were Europeans and 3 Annamites, all the patients were adults. The mortality among the sporadic cases was very low, there being only 2 deaths among the Annamites and 1 among the Europeans, while there were no fatalities among the children.

As regards the cases in the prison at Hainoi where the mortality was high, the agent of transmission of the disease was undoubtedly the louse, as all the prisoners were lousy and the epidemic came to an end as soon as disinfestation was carried out.

The louse was probably also responsible for the sporadic cases, the Annamites of the poorer classes being frequently lousy. Children probably play an important part in the aetiology of typhus, for as a rule their attacks are very mild and usually escape notice.

J. D. Rolleston.

STIVEN (H. E. S.). **Splenectomy for Egyptian Splenomegaly.**—*London Hospital Gaz.* 1928. June. Vol. 31. No. 8. pp. 225–227. With 2 figs. on 1 plate.

The author, who is Principal Medical Officer of the Egyptian Government Hospital, Port Said, has done 285 splenectomies in six years, with an immediate mortality of 13·4 per cent., and a total mortality within 2 or 3 months of 24 per cent. A questionary resulted in "good reports" from 64 per cent. [period since operation not stated]. The majority of the patients were between 15 and 25 years. The spleen weighs on an average seven times the normal and any treatment but excision is useless. If the patient comes from a malarious district operation is refused. The faeces "invariably" show *Schistosoma mansoni* and many other parasites may be present. The preparation of the patient is of such importance that it is given here in the author's words :—

"When a patient is admitted for splenomegaly with a view to operation he is given, as a matter of routine, a dose of carbon tetrachloride, varying from 2·00 to 4·00 according to age ; a full course of tartar emetic intravenous injections 0·12, every two days for twelve injections, and a course of six injections of 606.

"They take a mixture of rhubarb and soda for the first week, which is a splendid cleaner of the intestinal tract, and subsequently they are given a mixture of iron and arsenic and a full nourishing diet including "Fool Nabit," that is, beans which have been allowed to germinate 48 hours in water. These are then cooked quickly for four or five minutes in a good soup. They have a remarkable effect on the pellagrous cases which, I take it, are cases suffering from a vitamin deficient diet. This course of treatment generally lasts from five to six weeks, when the patient is greatly improved in general health and can stand the shock of operation.

"The evening before operation the patient is purged and given an injection of pneumococcic vaccine. This is essential as, failing this, the patient will almost certainly die from pneumonia after the operation. In fact about 5 per cent. get pneumonia in spite of the vaccine, but with another dose of vaccine they generally pull through. A dose of morphine and atropine is given half an hour before the operation."

The operation is done under stovaine and for the details the paper must be read.

A. G. B.

Petridis (Pavlos). La splénomégalie égyptienne. [**Egyptian Splenomegaly.**]—*Presse Méd.* 1928. May 2. Vol. 36. No. 35. pp. 546–549. With 2 text figs. [9 refs.]

The author has studied six cases of this disease at Alexandria and making use of the complete studies by Day, Fergusson & Richards gives a full account of the affection, so common at Cairo that Fergusson found it in 10 per cent. of autopsies at Kasr-El-Aini. The author's spleens were examined by Askanazy of Geneva, who drew his attention in 1924 to the fibro-siderotic or sidero-mycotic foci [this *Bulletin*, Vol. 25, pp. 163–5]. Day found in a series of cases that the liver contained bilharzia ova [vol. 21, p. 938]. Petridis confirms this and figures such an ovum. The conclusion is that Egyptian splenomegaly has a dual aetiology, bilharzial and mycotic. Askanazy, however, regards the aetiological rôle of the fungus as uncertain till the disease has been produced experimentally.

A. G. B.

Avery (Samuel D.). **Diphtheria Control.**—*Proc. Med. Assoc. Isthm. Canal Zone.* 1927. Vol. 15. pp. 45–52.

The author gives tables of the incidence of diphtheria in the Canal Zone Hospitals from 1906 to 1925 and of diphtheria in Panama City in 1925, 1926 and 1927. In 20 years on the Canal Zone 252 cases were admitted to hospital. Of these 41 per cent. were of pre-school age (1 to 5 years), 36 per cent. of school age, and 23 per cent. of adult age (18 years and upwards). These percentages show that control measures cannot be limited to any one age group. The measures on the Zone have consisted in prompt isolation of all positive and also all suspected cases : they appear to be sufficient. In Panama city, where conditions are less favourable, there were in the 3-year period 338 cases with 16 deaths, 77 per cent. of cases among the black population and 23 per cent. among the white. Moreover, in the 20-year period there were 7 deaths in the Zone against 85 for Panama. In Panama there was a marked increase in the 3-year period, 54, 105, 179. It is concluded that the protective measures are not adequate and that other measures, such as toxin-antitoxin immunization, may be desirable.

A. G. B.

Peirrier. Etude sur la composition du n'sou, poison indigène employé au Cameroun. [**The Composition of N'sou, a Native Poison employed in the Cameroons.**]—*Ann. de Méd. et de Pharm. Colon.* 1928. July–Aug.–Sept. Vol. 26. No. 3. pp. 299–304.

N'sou consists of leopard's feelers, cut small and impregnated with an extract made from a mixture of vegetable poisons. It is said that the hairs are spread on the victim's chair or bed ; the poison enters through unnoticed lesions of the skin and death follows in 6–12 hours. There are ten ingredients of the extract according to the author's analysis of labelled specimens. Two are of animal origin, one a toad which secretes venom and can project it to a distance ; the venom contains two alkaloids, one of which acts like digitalin, and the other paralyses muscle ; the toad [? the whole toad] is dried and pulverized : the other is a black scorpion of the genus *Buthus*, which is similarly treated. Of the vegetable poisons one is *Erythrophloeum guineense*, N.O.

Leguminosae, which is a well-known ordeal poison. The accused drinks a decoction of the bark: if he dies he is guilty; if he vomits he is innocent; but he probably dies of the poison later, especially since Strychnos bark is often added.. The author killed a guineapig with a watery extract in five minutes. Another vegetable poison was *Paulowilhelmia spinosa*, N.O. Acanthaceae, which is known as a fish poison. A third is *Macaranga spinosa*, N.O. Euphorbiaciae, used to poison domestic animals, as well as fish. A fourth is the well-known *Strophanthus glaber*, N.O. Apocynaceae, the seeds of which are used to poison arrows. A kid on a wound of which fresh poison was laid died in two minutes. Another substance is a bulb of the genus *Crinum*, which contains a vesicating principle. Lastly, there is a mysterious substance known as Bototo. This is very formidable and its secret is carefully guarded. It is a bark which killed a dog with tetanic convulsions. The author suggests it is curare, furnished by *Strychnos icaja*. From this the fetish men get a draught which is employed in ordeals: the patient has to jump over a stick half a metre from the ground; if paralysis prevents him, he is guilty. [This paper takes us back to the blasted heath of Macbeth.]

A. G. B.

PAGE (Irvine H.), TURNER (Kenneth B.) & WILSON (Jessie H.). **The Clinical Significance of Eosinophilia on a General Medical Service.** —*Jl. Lab. & Clin. Med.* 1928. Sept. Vol. 13. No. 12. pp. 1109–1116. [75 refs.] [College of Physicians & Surgeons, Columbia Univ., & Presbyterian Hosp., New York City.]

The authors' survey was made to determine, if possible, the clinical significance of eosinophilia in a series of hospital cases. By eosinophilia they mean a condition in which there is 5 per cent. or more of eosinophiles in the blood. Of patients admitted to hospital in New York between March 1923 and October 1927, 5,500 were medical cases and had at least one complete blood count including a differential leucocyte count from a stained smear. Search for ova and parasites in the stools was made in practically all cases, and repeatedly when eosinophilia was present. The conclusions are as follows:—

"1. An eosinophilia of 5 per cent. or more occurred in 300 patients among 5,500 general medical cases, all of whom had complete blood counts and stool examinations. The small number of dermatologic cases seen and the entire absence of scarlet fever patients prevent this series from being wholly representative. Cases of obvious blood diseases were excluded.

"2. Of the 300 cases of eosinophilia in this series, 10 per cent. occurred in parasitic infestation; 13 per cent. in rheumatic fever; 13 per cent. in chronic pulmonary disease (chronic bronchitis, emphysema, asthma); 10 per cent. in the chronic nephritis-general arteriosclerotic group. In fully 40 per cent. the eosinophilia occurred in isolated cases of various conditions and had no diagnostic significance.

"It is suggested from this series that eosinophilia may be a part of the phenomenon of allergy."

There were 31 cases of parasitic infection, 15 of which were trichiniasis. In one of these the eosinophilia reached 81 per cent. In 4 cases of amoebic dysentery the eosinophiles ranged between 5 and 7 ger cent. For further details the paper must be consulted. Note the long list of references.

A. G. B.

Donnison (C. P.). **Valvular Heart Disease in the African Native.**—*Kenya & East African Med. Jl.* 1928. Sept. Vol. 5. No. 6. pp. 210–213.

In two years' experience of a large native reserve in South Kavirondo, Kenya Colony, during which 12,000 labour recruits have been in hospital under the author's care, he has seen only ten cases with definite evidence of valvular disease. In all the aortic valves were affected, never the mitral. Of the ten cases one was due to ulcerative endocarditis, one case was diagnosed as aortic stenosis, but afterwards developed a diastolic bruit, the rest had signs of aortic incompetence only. All except one of 45 were males between 20 and 30 years. The aortic stenosis patient gave a history somewhat suggestive of acute rheumatism; his W.R. was negative. Of the other cases, in four instances the Wassermann or Sigma reaction was positive, in two negative; yaws is prevalent in S. Kavirondo. In any case syphilis cannot be accepted as the cause of all the heart lesions. The author states that he has never seen a definite case of acute rheumatism, chorea or subcutaneous nodes in an African native. An account is given of the autopsy findings in the case of ulcerative endocarditis. The valves were sclerosed with large vegetations, one of which contained a deposit of calcareous salts. Some of the vegetations consisted of chronic inflammatory tissue. The author thinks that this and the presence of calcareous salts suggest chronic endocarditis of rheumatic origin, and concludes that rheumatic heart probably occurs in Africans, but is rare.

A. G. B.

Lloyd (R. B.). **The Wassermann Test in India.**—*Indian Med. Gaz.* 1928. Apr. Vol. 63. No. 4. pp. 173–176.

Seven years ago the author took charge of the office of Imperial Serologist, Calcutta. That laboratory, as part of its work, carries out Wassermann tests (W.) for the large majority of the Calcutta hospitals and for others in Bengal. The author's extensive experience of a matter of great importance to all doctors, and patients, in the tropics is therefore of great interest.

He notes as to *syphilis* in Bengal that it is extremely prevalent; extensive destructive lesions are rare. Often the primary sores show no induration; they are frequently phagedaenic: they swarm with spirochaetes. Secondary rashes are little in evidence in skin clinics [where they would be the more carefully looked for and the sooner noted]: condylomata, however, are very common. Later lesions are very noticeable in the Calcutta hospitals. Nervous lesions, especially hemiplegia and transverse myelitis, and grave cardiac lesions are frequent. Parasyphilitic lesions are seldom seen. Many cases of anaemia with positive W. are seen in young men—they do well on anti-syphilitic treatment. The syphilis rate of the Calcutta hospital population is 15 to 20 per cent. As to specificity of reaction, it is essential to examine reaction in the common tropical disorders.

Malaria—the author is confident that the method used in his laboratory does not yield a positive result in malarial cases, febrile or otherwise.

Yaws is rare in Bengal. It gives a positive result, but clinically generalized yaws is easily recognized, and treatment is the same as in syphilis.

Leprosy—the one disease of non-spirochaetal origin in which a high percentage of positive W. reactions are seen.

It is essential to devise a serological test for syphilis adapted to the peculiar case of leprosy. If a technique (Kolmer's) affording a wide gap between the antigenic and anti-complementary doses of the antigen employed be used, leprosy gives a negative W. reaction provided syphilis be absent. The author so far has found Kahn's flocculation reaction satisfactory for testing sera of leprosy patients. He has noted a tendency for weak positive W. to be given by sera of *pregnant* women —strongly positive W. means syphilis (apart from leprosy and yaws). Kolmer's wide-gap technique excludes the weak positive W. of pregnancy alone. There is a very fatal *anaemia of pregnant women* in Bengal. Though Dr. Margaret BALFOUR has found less than half of these women's sera gave positive W., yet syphilis may be the basis of some of these cases.

Blood transfusion—now a frequent operation in Calcutta. Besides blood group determination, every donor is examined for W. reaction and, if positive, rejected. He considers the W. test the best for diagnosis of syphilis in the East, as performed in central laboratories by a trained skilled staff. In hot weather it is best to send the tubes of blood for testing in a box of sawdust impregnated with ice and salt. Blood drawn in hot weather becomes completely haemolysed in two days. Stale serum, too, may become highly anticomplementary, probably owing to bacterial contamination.

H. M. Hanschell.

MANAI (Andrea). Le alterazioni della crasi sanguigna nel favismo. [**Blood-Changes in Favismus.**]—*Haematologica.* Pavia. 1928. Vol. 9. No. 4. pp. 369–380. [7 refs.] French summary p. 381. [Inst. of Path. & Clin. Med., Univ., Sassari.]

Five cases of favismus are recorded from the haematological aspect. The patients were usually seen and examined for the first time some days after the onset of symptoms. The red cells were reduced to between one and two millions, and showed marked anisocytosis, with preponderance of microcytes, together with several nucleated corpuscles ; the haemoglobin was even more reduced, giving a low colour index (0·7–0·9). The leucocytes were always found increased, and in one with erythrocytes 1,000,000 the leucocytes were 28,800 per cmm., of which the polymorphonuclears constituted 68 per cent. (in some of the patients they were as high as 80 per cent.).

The symptoms of favismus have been ascribed to anaphylaxis. Experiments were carried out on rabbits sensitized by fresh extract, by the gastric route in two groups, intravenously in another group. Examination was made of their blood before the anaphylactic shock, and again during the shock. In all cases the red and white corpuscles were reduced, the former by about 40 per cent., the latter rather more. A second examination twenty-four hours or more afterwards showed a similar reduction of red cells but a return in the number of leucocytes to normal or even to considerably higher.

It is probable, therefore, that in man also leucopenia precedes the leucocytosis, but the patients are not seen until this stage, if it occurs, has passed.

H. Harold Scott.

HARLEY-MASON (R. J.). **The Treatment of Ulcers with Pix Liquida (Stockholm Tar).**—*Kenya & East African Med. Jl.* 1928. Feb. Vol. 4. No. 11. pp. 350–352.

As a result of a chance discovery of the value of tar 300 ulcers have been thus treated.

"The ulcer is first swabbed out with eusol, any sloughs present are removed and the surrounding skin is cleaned. The tar is spread thickly on a piece of plain white lint, which is then applied and covered with a thick piece of wool and a bandage. It is sometimes convenient to pour the tar direct into the wound. For an ordinary dirty ulcer this is left on without changing the dressing for three days; if the ulcer is foul, it is changed after two days; in the case of a large offensive ulcer of the worst type, it is changed daily. On removal of a dressing that has been left on for three days the ulcer is found to be filled with very dirty looking discharge; but when this is swabbed off, the floor of the ulcer is seen to be forming healthy granulation tissue. After three or four days of this treatment the tar is stopped and fomentations are applied three times a day for two days, after which the tar treatment is repeated if necessary.

"For the more superficial ulcers the first tar treatment will suffice. For deeper ulcers it may have to be repeated once or twice.

"Zinc ointment is applied as soon as the ulcer has become half filled with granulations, even though still discharging slightly. As soon as the surface epithelium starts spreading in from the edges the zinc ointment is left on for three days without changing, in order not to injure the growing epithelium. Rapid progress is obtained in this way."

The treatment has the advantages of cheapness and ease in application, and suits all but a small percentage of ulcers.

A. G. B.

TORRES (Octavio). Tratamento das ulceras chamadas tropicaes (produzidas pela associação fuso-espirillar) pelo sôro humano sêcco. [**Treatment of Tropical Ulcer by Dried Human Serum.**]—*Arch. Brasileiros de Med.* 1928. June. Vol. 18. No. 6. pp. 583–585.

Those ulcers in which spirochaetes and fusiform bacilli are found associated the author treats by first cleaning with saline, then dusting over with dried serum and covering the whole with banana leaves. Dr. AMARAL had previously recommended horse-serum, but the author made use of the sera sent up for Wassermann tests, pooled them in Petri dishes, placed these in an incubator at 37° C. to dry, and then powdered the product.

H. Harold Scott.

IAGNOV (S.). Le traitement des abcès pulmonaires non amibiens par le chlorhydrate d'émétine. Faits cliniques. Travaux expérimentaux. [**Treatment of Non-Amoebic Pulmonary Abscess by Emetine Hydrochloride.**]—*Ann. de Méd.* 1928. July. Vol. 24. No. 2. pp. 223–246.

A report, after close clinical study, on seven cases of pulmonary abscess (in Bucharest), demonstrating the effective curative action of emetine hydrochloride. The sputa of these cases revealed a polymorphic microbic flora. No amoebae were found. In three cases spirilla were found, but no selective action of emetine on the spirilla can be claimed, for the drug was equally effective in the four cases without spirilla in the sputa; nor can the spirilla be considered as the

prime cause of the lung abscess. Cure of the seven cases was effected in two to three weeks. The doses of emetine hydrochlor. (daily hypodermic injections) varied from 0·01 to 0·02 centigramme, the total quantity of emetine given per case was from 1 to 1·5 gramme. [These results point to the too frequent diagnosis of amoebiasis because of, and only because of, recovery after emetine therapy.

H. M. Hanschell.

McCarrison (R.). **Studies on Lathyrism. Part II.**—*Indian Jl. Med. Res.* 1928. Jan. Vol. 15. No. 3. pp. 797–800. With 7 charts (21 figs.). [1 ref.]

The object of these experiments was to learn whether or not a morbid state resembling lathyrism could be produced in rats by means of diets consisting largely of *khesari* or *acta* [see this *Bulletin*, Vol. 22, p. 985], and the conclusion reached was that neither the pure culture of *Lathyrus sativus* (khesari) nor of *Vicia sativa* (akta) nor the khesari used by sufferer from lathyrism in Rewah caused lathyrism or any disease of the nervous system in rats. For rats lathyrus is superior to whole wheat flour, vicia inferior.

A. G. B.

Ricou (D.). Six cas de tétanos infantile traités par le sérothérapie (ancien sérum antitétanique de l'Institut Pasteur) suivis de guérison. [**Six Cases of Recovery from Tetanus in Children treated by the Old Antitetanic Serum of the Pasteur Institute.**]—*Bull. Soc. Path. Exot.* 1928. Jan. 11. Vol. 21. No. 1. pp. 73–84. [2 refs.]

The ages of the six children ranged from five to seventeen years and their cases are given in some detail. The author reports these because (1) though the cases were acute and with a relatively short incubation period in weakly children serotherapy was usually the only treatment ; (2) the doses were moderate, and given daily for a fortnight or longer ; (3) the routes used were the subcutaneous and intraspinal only. The doses were 40 to 60 cc. subcutaneously and 10 to 20 by the spinal cord. The serum in question is compared with some other preparations.

A. G. B.

d'Amato (Luigi). Su di una nuova emodiagnosi delle infezioni tifoidi e della infezione melitense mediante la reazione emoclasica. [**The Haemoclastic Reaction—a New Method of diagnosing Infection by** *Bact. typhosum* **and** *Br. melitensis.*]—*Riforma Med.* 1928. Jan. 9. Vol. 44. No. 2. pp. 32–33. [3 refs.]

The author finds that the injection of a small quantity ($\frac{1}{3}$–$\frac{1}{2}$) of the dose of the vaccine used for prophylaxis produces in a patient a haemoclastic shock, evidenced by a fall in the leucocytes. The mode of applying the test is : The white corpuscles are counted and the provocative dose is injected, corresponding to about 20–30 millions of bacilli. After half an hour the leucocytes are again counted. A fall of 1,000 or thereabouts is designated + (600–800, doubtful ±), of 2,000, strong positive ++, of 3,000 or more, very strong positive +++.

In 48 cases of undulant fever he found 12+++, 30++, and 6+; in 39 cases of enteric fever (*B. typhosus* infection) 6+++, 24++, 9+. In neither group was there a negative nor a doubtful. The reaction was specific. 40 patients with undulant fever were injected with typhosus vaccine, in three the results were doubtful ±, 27 negative; of 26 enteric patients injected with melitensis vaccine 24 proved negative, and two were doubtful.

H. Harold Scott.

Moses (Arthur). Epidemiologia e prophylaxia da febre typhoide—Da vaccinação antityphica por via oral. [**Oral Vaccination in Typhoid Fever.**]—*Ann. Paulist. Med. e Cirurg.* 1926. Nov.–Dec. Year 14. Vol. 17. No. 11–12. pp. 159–167.

The author reviews some of the literature of oral vaccination and believes in the value of Besredka's bile-vaccine. As regards human beings he does not produce much evidence. As the result of laboratory experiments on animals with emulsion of typhoid bacilli destroyed by heat, he has obtained an agglutinating serum of titre from 1–20 to 1–5,000 [*v.* this *Bulletin*, Vol. 20, p. 747 (Pirie; Dubinsky); Vol. 21, p. 451 (Stibbe)].

J. H. Tull Walsh.

Pacheco (Genesio). Um caso de infecção humana por bacillo proteo (*Proteus americanus*, n. sp.). [**A Case of Human Infection by a Proteus Bacillus.**]—*Sciencia Med.* 1928. Mar. Vol. 6. No. 3. pp. 132–144. With 1 chart in text. [8 refs.] English summary pp. 144–145.

The patient had symptoms of an affection of the liver with concomitant general infection. Blood culture gave on two occasions a *Proteus* bacillus. The serum of the patient agglutinated the isolated organism in high titre and was still highly agglutinating three months later. The organism was closely related to *Proteus mirabilis*, but differed in the production of a massive, non-contracting coagulum in milk without gas formation. Saccharose, sorbite and galactose were not fermented.

W. F. Harvey.

Macnalty (A. Salusbury). **An Investigation of Lymphadenoma with Relapsing Pyrexia.**—*Ministry of Health. Reports on Public Health & Med. Subjects.* No. 50. pp. vi+86. With 6 charts & 3 plates. 1928. London: H.M.S.O. [1s. 6d.]

This account of a rare disease is of interest to our readers because the relapsing pyrexia may lead to a diagnosis of one of the fevers of the tropics, especially when there is no enlargement of superficial glands. It is suggested that the disease is not as rare as it is believed to be. A case of Egyptian origin (Manson-Bahr & Gill, this *Bulletin*, Vol. 21, p. 473) has, it would appear, been overlooked by Dr. MacNalty. Seyfarth's paper, on three cases, was probably published too late for inclusion (*l.c.* Vol. 25, p. 391).

A. G. B.

Santesson (C. G.). Ein Pfeilgift mit Herzwirkung aus Südamerika (Columbia). [**An Arrow Poison acting on the Heart, from Colombia.**]—*Acta Med. Scandinavica.* 1928. Vol. 68. No. 3–4. pp. 287–304. With 4 text figs. [12 refs.] [Caroline Med. Chirurg. Inst., Stockholm.]

The poison in question was brought home by a traveller who described its collection from a tree, *pakurú*, the botanical name of which is not known. It is used by the Indians in hunting, not apparently in war. Nothing is known of the symptoms produced, nor of its effect on man. The author experimented with the sample. It contained a glucoside which killed frogs and rabbits with the heart in systole ; its action on fowls and mice was much less. He believes that this is the first report from the New World of an arrow poison acting on the heart.

A. G. B.

Gross (Martin). Zur Kasuistik des Ulcus molle serpiginosum. [**A Case of Ulcus Molle Serpiginosum.**]—*Dermat. Woch.* 1925. Feb. 7. Vol. 80. No. 6. pp. 205–215. With 7 text figs. [Numerous refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

A detailed report of a case as designated above, which resisted all treatment, surgical and medical, general and local for over a year. Although there was some improvement shown with the initiation of each different therapeutic measure, the success was not lasting. Injections of an autovaccine (strepto-bacillus Ducrey) met with more success than anything else until healing eventually occurred after complete removal of all affected tissue down to healthy tissue with the thermocautery.

H. S. Stannus.

Hermans (E. H.). Ulcus molle, bubonen, lymphogranuloma inguinale en climatische bubonen. [**Ulcus Molle, Buboes, Lymphogranuloma Inguinale and Climatic Bubo.**]—*Nederl. Tijdschr. v. Geneesk.* 1928. Sept. 15. 72nd Year. 2nd Half. No. 37. pp. 4526–4536. With 1 chart. [20 refs.]

For the differentiation of the affections mentioned in the title the author uses two cutireactions and arrives at the following conclusions :—

(1) In the intracutaneous injection of Dmelcos (a French preparation of Ducrey's bacillus) we have at our disposition an important aid in the diagnosis of ulcus molle and its complications. Administered intravenously this preparation is also of great therapeutic importance.

(2) Lymphogranuloma inguinale antigen, prepared after Frei, causes a specific reaction. The results justify the opinion that lymphogranuloma inguinale is identical with climatic bubo.

(3) In patients with a positive cutireaction to Frei's antigen, subcutaneous injection of the same preparation often yielded excellent therapeutic results.

(4) The author separates a group of bubonic affections from the rest ; this group shows a specific reaction to an antigen which he calls lymphogranuloma inguinale antigen II. In adequate cases also this antigen may be used therapeutically.

(5) Two cases of jaundice which occurred respectively after intravenous treatment with Dmelcos and after intracutaneous application of FREI's antigen may serve as a warning against similar complications and their possible significance.

W. J. Bais.

VERGE (J.). Les maladies communes à l'homme et aux animaux. I. La mélioïdose. [**Diseases Common to Man and Animals. I. Melioidosis.**]—*Rev. Gén. de Méd. Vét.* 1928. Nov. 15. Vol. 37. No. 443. pp. 623–626. [7 refs.] [Summary appears also in *Bulletin of Hygiene.*]

This is a review of the subject of Melioidosis at considerable length and with detail under various heads. The works of STANTON and FLETCHER and of PONS are freely drawn upon and reference made to the discovery of the causative organism by WHITMORE. Melioidosis is a disease which affects the horse, dog, cat, rabbit, guineapig, rat and man under natural conditions and which, both in regard to its lesions and its causative organism, resembles glanders very closely. Verge and PAIREMAURE have shown that the serum of a glandered horse deviates complement to the same amount in the presence of the bacillus of glanders as of the bacillus of melioidosis. STANTON, FLETCHER and SYMONDS (see this *Bulletin*, 1928, p. 382) have published a case of melioidosis in a horse. The lesions are necrosis, caseation and abscess formation. When the *Pfeifferella whitmori* is injected intraperitoneally in the male guineapig it gives rise to an orchitis, which is a diagnostic character of the glanders bacillus. The natural mode of infection is by ingestion and very probably by contamination of food by rats or other infected rodents.

W. F. Harvey.

RAO (G. Raghunatha). **A Case of Spontaneous Rupture of Enlarged Spleen.**—*Indian Med. Gaz.* 1928. May. Vol. 63. No. 5. p. 273.

This case was diagnosed on symptoms. There was no autopsy.

A. G. B.

ROMITI (Cesare). Contributo al trattamento chirurgico della elefantiasi. [**The Surgical Treatment of Elephantiasis.**]—*Arch. Ital. di Chirurgia.* 1928. Vol. 20. No. 6. 34 pp. With 29 figs.

This is a fuller version of the (English) paper summarized in this *Bulletin*, Vol. 25, p. 383. It is well illustrated.

A. G. B.

BERNARD (P. Noël). Les Instituts Pasteur d'Indo-chine.—*Arch. Insts. Pasteur d'Indochine.* 1926. Apr.–Oct. No. 3 & 4. pp. 3–6.

CAMACHO (Leovigildo). Un caso monstruoso de elefantiasis del escroto.—*Med. Países Cálidos.* Madrid. 1928. Jan. Vol. 1. No. 1. pp. 74–76. With 2 text figs.

DEL FAVERO (Ernesto). Il quadro ematologico come criterio differenziale diagnostico delle più importanti malattie esotiche.—*Ann. di Med. Nav. e Colon.* 1928. Mar.–Apr. Year 34. Vol. 1. Nos. 3–4. pp. 150–159. [37 refs.] [Lab. Exotic Path., R. Univ., Padua.]

DUREN. Note sur l'hygiène et la santé des enfants européens au Congo belge. —*Ann. Soc. Belge de Méd. Trop.* 1928. June. Vol. 8. No. 1. pp. 117–120.

Ghosh (Sudhamoy). The Scientific and Economic Importance of Research on Indian Medicinal Plants.—*Indian Med. Gaz.* 1928. Nov. Vol. 63. No. 11. pp. 650–653.

Gollini (Amerigo). Quelques considérations sur le fonctionnement de l'hôpital des nègres à Coquilhatville et d'autres services médicals de la ville.—*Arch. Ital. Sci. Méd. Colon.* 1927. Aug. Vol. 8. No. 8. pp. 442–451.

Howell (A. T.). A Case of Exophthalmic Goitre in a Meru Native.—*Kenya & East African Med. Jl.* 1928. Sept. Vol. 5. No. 6. p. 194.

Ismail (Abd-El-Aziz). Aetiology of Hyperpiesis in Egyptians.—*Lancet.* 1928. Aug. 11. pp. 275–277. [1 ref.]

Jeanselme & Horowitz. Un cas d'éléphantiasis de la jambe des pays chauds. —*Bull. Soc. française Dermat. et Syph.* 1928. July. No. 7. pp. 549–552. With 1 text fig.

de Lastcurs (Fougerat de David). L'hygiène solaire aux colonies.—*Rev. Méd. et Hyg. Trop.* 1928. Sept.–Oct. Vol. 20. No. 5. pp. 133–144. With 4 text figs.

Le Dantec. Histoire succincte de la fondation de la chaire de médicine coloniale et de clinique des maladies exotiques auprès de la Faculté de Bordeaux.—*Jl. Méd. de Bordeaux.* 1928. Nov. 10. Vol. 105. No. 22. pp. 892–893.

Legendre (J.) & d'Arusmond (L. Phiquepal). Traitement de la pneumonie des noirs, par les sérums antivenimeux et antidiphtérique.—*Bull. Acad. Méd.* 1929. Jan. 29. Year 93. 3rd Ser. Vol. 101. No. 4. pp. 142–145.

Leger (Marcel). L'Institut Pasteur de Dakar.—*Presse Méd.* 1928. July 7. Vol. 36. No. 54. pp. 861–862. With 3 text figs.

Lodato (Gaspare). Si deve ammettere un mal di mehara per i nazionali che prestano servizio presso reparti meharisti coloniali ?—*Arch. Ital. Sci. Med. Colon.* 1927. July. Vol. 8. No. 7. pp. 388–392. [Inst. of Trop. Path., Univ., Bologna.]

Matsuoka (Fuyuki). Die experimentelle Untersuchung der Emetin- und Cephaelinintoxikation.—*Scientific Reports Govt. Inst. Infect. Dis.* Tokyo. 1927. Vol. 6. pp. 469–475.

Olivares (Rafael). Elefantiasis del escroto.—*Med. Países Cálidos.* Madrid. 1928. May. Vol. 1. No. 3. pp. 261–269. With 3 text figs.

Servidori (Genunzio). Brevi notizie nosografiche sulla Somalia Italiana (Zona di Serenli).—*Arch. Ital. Sci. Med. Colon.* 1928. Oct. Vol. 9. No. 10. pp. 625–629. [Inst. of Trop. Path., Univ. Bologna.]

Seshachalam (T.). Musculo-Spiral Nerve Paralysis following an Intramuscular Injection of Quinine.—*Indian Med. Gaz.* 1929. Feb. Vol. 64. No. 2. pp. 86–87.

Shattuck (George C.). Scurvy, Pellagra, and Sprue at the Boston City Hospital —*New England Jl. of Med.* formerly *Boston Med. & Surg. Jl.* 1928. Nov. 15. Vol. 199. No. 20. pp. 986–987. [3 refs.]

Shattuck (George C.). Surgical Aspects of a Few Tropical Diseases.—*New England Jl. of Med.* formerly *Boston Med. & Surg. Jl.* 1929. Jan. 31. Vol. 200. No. 5. pp. 229–231. [10 refs.] [Harvard School of Public Health, & Boston City Hosp., Boston.]

da Silva (J. Ramos). Epidermophycia inguinal.—*Brasil-Medico.* 1928. Nov. 10. Vol. 42. No. 45. pp. 1274–1275. With 1 text fig.

Société Médico-Chirurgicale de l'Ouest-Africain Français. Réception des membres de la mission sanitaire de la Société des Nations 29 mars 1926.—23 pp. With 6 figs. 1926. Laval. Imprimerie Barnéoud.

Trabaud (J.). Ce qu'il faut entendre par les termes de typho-malaria ou de fièvre typho-palustre.—*Bull. Acad. Méd.* 1929. Jan. 8. Year 93. 3rd Ser. Vol. 101. No. 1. pp. 42–47. With 1 text fig. [1 ref.]

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REVIEWS AND NOTICES.

HEGH (Emile) [Ingénieur Agronome, Lauréat de l'Institut de France, attaché au Ministère des Colonies de Belgique.] **Les Tsé-Tsés. Tome Premier. Généralités.—Anatomie.—Systématique.—Reproduction.—Gîtes à Pupes.—Ennemis Prédateurs et Parasites.** [The Tsetse-Flies. Vol. 1.]—pp. xiv+742. With 327 figs. & 15 coloured plates. 1929. Brussels. Royaume de Belgique. Ministère des Colonies. (Imprimerie Industrielle et Financière, 4, rue de Berlaimont.)

The dominant sensation in the mind of the medical entomologist confronted for the first time with this splendid volume must surely be astonishment, at the munificence with which it has been produced by the Belgian Colonial Office as a veritable *édition de luxe*, no less than at the industry of its author. Half-bound, printed throughout on glazed paper and adorned with exquisitely reproduced examples of Mr. TERZI's consummate skill, this book, could it have made its appearance some sixty years ago, might almost have found a place on a Victorian drawing room table, in serious rivalry with " Picturesque Europe " or " Costumes in Many Climes." Having said this, let us forthwith disclaim any desire to be flippant or to disparage ; we only wish to indicate to those who may not have seen it how widely M. Hegh's latest work differs in externals from the usual type of entomological text-book produced in war-impoverished Britain.

In his Preface M. Hegh explains that in 1923 he was instructed by the Belgian Colonial Office to prepare a new French edition of his little brochure " Notice sur les glossines ou tsé-tsés," which was compiled and translated from English sources, and published in 1915. It was at first believed that requirements would be satisfied by translating, with any necessary additions, the work by AUSTEN and Hegh, which was issued by The Imperial Bureau of Entomology in 1922. After toiling for a few months, however, M. Hegh came to the conclusion that what was needed was " not a *résumé*, but a translation *in extenso* or a reproduction of the principal passages in all the important memoirs on the subject of tsetse-flies, not merely from the point of view of biology in the strict sense of the term, but also in connexion with the anatomy, systematics and geographical distribution of these insects." Labouring with the methodical thoroughness with which all his work is characterized, M. Hegh has produced the volume before us, the subject matter of which, as printed on its title-page, is stated above. Volume II, now in course of preparation, will deal with : geographical distribution of tsetse-flies, by species and by colony ; habitats of the different species of tsetse ; biology of adult tsetse-flies ; nutrition of tsetse-flies—sources of blood—rôle of big game ; influence of external agents on adult tsetse ; study of possible means of combating tsetse-flies—clearing—direct destruction—prophylactic measures, etc. ; methods of collecting, preserving and studying tsetse-flies.

It need scarcely be remarked that the system of translating " *in extenso*," as opposed to summarising, has " the defects of its qualities," and that its merits are not those of conciseness. Thus M. Hegh, after printing in full literal translations of the descriptions in AUSTEN's " Handbook," in the following chapter reproduces in a similar manner the descriptions of the same species by NEWSTEAD, in the latter's " Guide to the Study of Tsetse-Flies " (1924), accompanied in this case, be it said, by reproductions of the original figures of the genital armature.

Seeing that the bulk of the work upon and in relation to tsetse-flies hitherto accomplished has been done by Englishmen and described in English, it will be only natural if M. Hegh's book should prove of greater value to Belgian and French than to British workers. In view, however, of the fact that certain English monographs have long been out of print, while copies of many anatomical and other papers dealing with tsetse-flies must now be exceedingly difficult to procure, the faithful translations supplied in this

volume, accompanied as they are by reproductions of original illustrations, will possess real utility even for those whose natural medium of expression is other than French. The various sections of the work are accompanied by extremely useful bibliographies ; and, although nothing can compensate for the absence of a properly compiled index, the " Table des Matières " at the end of the volume is reasonably comprehensive. Turning to the illustrations, the black and white figures, all of which are remarkably well reproduced, include copies of photographs of a large number of breeding places of various species of *Glossina*, some of which are now published for the first time. Allusion has already been made to the excellence of the coloured plates ; among these are copies of the ten plates in Austen's (1911) " Handbook " (by permission of the Trustees of the British Museum), and also illustrations of four species (*Glossina austeni*, Newstead ; *G. swynnertoni*, Austen ; *G. tabaniformis*, Westwood ; and *G. schwetzi*, Newstead and Evans) which have not previously been figured.

E. E. Austen.

General Government of French West Africa. **African Conference of the Yellow Fever (Dakar—April 1928).**—299 pp. With 3 plates. 1929. Paris : Imprimerie Militaire Universelle L. Fournier, 264 Boulevard Saint-Germain.

This is the official report of the proceedings of an inter-colonial conference on yellow fever held at Dakar from April 23rd to 30, 1928, called on the initiative of the Governor General of French West Africa and attended by representatives of the following Colonies, Dakar and Dependencies, Sierra Leone, Nigeria, Gambia, Gold Coast, Togo, Senegal, also the American Commission of Lagos, the Alfred Jones Laboratory, Freetown, Sierra Leone, and the Pasteur Institute, Dakar. Dr. Lasnet, Inspector General of the Sanitary Service Colonial Office, Paris, was the President.

The intervals between the meetings were occupied by visits to " the principal extinct foci of yellow fever and plague in Senegal," to Gorée, Thies, Inouana, Rufisque, Tiaroye (gauze-protected dwellings), to " a focus of yellow fever " and elsewhere. At the Inaugural Session special honour was paid to the memory of Dr. Adrian Stokes and Dr. Guillet, sacrificed in the cause of Science. Tributes to the memory of Dr. Noguchi and of Dr. Young are added in a supplement.

The first paper by Dr. Lasnet on Yellow Fever in Senegal in 1927, opens with the statement that yellow fever had been " lying dormant in Senegal for nearly 14 years " but revived towards the end of 1926. The real value of this statement many possibly be understood by a somewhat similar one as regards Accra, which appears later (p. 123) viz., " Until the outbreak (1926–27) which forms the subject of this report Accra had remained free from any serious incidence of yellow fever for over fifteen years " (1911–1925). But a Table which immediately follows shows that another method of stating the facts is possible, viz., " That during the sixteen years (1911–25) Accra had never been free for a single year from yellow fever, the number of *reported* cases having been 136, of which 83 had been fatal ; these cases and deaths having been thus distributed :—

	Cases.	*Deaths.*
European	78	58
African	56	23
Syrian	2	2
	136	83

This is in accordance with the almost invariable experience of the British West African Colonies, viz., long periods of quiescence followed by a year or two of activity.

In Senegal in 1927 the reported cases were thus distributed by races :

	Cases.	*Deaths.*
Europeans	133	88
Syrians	44	32
Portuguese halfbreed	9	8
Moroccans	4	1
	190	129

There were also 30 " suspected " cases with no deaths.

Mention is made of the fact that 12 concealed cases with 11 deaths were nearly all Syrians " whom their companions hid in order to escape sanitary measures." This justifies the present writer's call to " Watch the Syrians." Three pages in Dr. LASNET's paper are devoted to symptomatology; two to the " Importance of early prophylactic Diagnosis " (suspected febrile cases); four to " Treatment and vaccinations " ; and six to " Epidemiology of the Campaign and lessons learned from it."

A paper by A. Blair AITKEN, Andrew CONNAL, G. M. GRAY, and E. G. SMITH deals with an outbreak of yellow fever in Lagos during 1925. It is stated that the previous epidemic at all approaching it in extent dates back to 1913. Twelve cases were officially reported with seven deaths and five recoveries. There were also five suspicious cases which ended in recovery.

Papers by A. Blair AITKEN and E. C. SMITH and Selwyn CLARKE deal with yellow fever in Lagos and Accra in 1926 and 1927.

A paper by Dr. SOREL on Prophylaxis of Yellow Fever at Dakar rather suggests that until 1927 the Health service at Dakar had not been very efficient.

Dr. SOREL's paper contains a valuable report (p. 265) on the use of sulphur dioxide in " Disinsectization " and " Deratization " which embodies the experience gained in dealing at Dakar with 30,000 buildings, including huts, houses, offices and shops, without previously sealing up cracks or covering native huts. Large apertures were either simply boarded up or plugged. In the native huts, 30 grs. per cubic metre of " Sic du Midi " were found sufficient to destroy mosquitoes, bugs, cockroaches and rats. The process is described as simple, rapid and as without noxious offect upon metals, fabrics, colours, glass and even foodstuffs, kola excepted.

The time occupied was thus much shortened, 70–75 huts or 30–40 rooms in concrete buildings being dealt with in a day by the medical officer in each district. The duration of exposure to the fumes was one hour.

When Dr. Wyckliffe ROSE attended a meeting of the Colonial Advisory Medical and Sanitary Committee as a preliminary to the despatch of the Rockefeller Commission the writer strongly advised the selection of Dakar as the base of operations, his reading having led him to the opinion that it would prove to be the best place on the West Coast of Africa for the study of cases of yellow fever. This suggestion was, however, not adopted. On the same occasion he laid special stress upon the vast difference between " eradicating " yellow fever from such a place as Guayaquil and from any one of the West African Colonies.

So far as the writer has observed, this Report does not contain a single reference to the work of the Yellow Fever Commission (West Africa). Possibly the answer may be that the terms of reference to the Conferences precluded any review of the previous work.

None of the papers mentioned contains any important addition to our knowledge of the disease and as regards clinical analysis they are in less detail than the sections of the reports of the Yellow Fever Commission (West Africa) devoted to the subject.

Much space is devoted to the consideration of the work of NOGUCHI on Leptospira icteroides.

On his return from a Conference held in 1924 at Jamaica on Health Conditions in Tropical America the writer published a booklet entitled " An Impression of Jamaica and the Panama Canal Zone " in which he dealt with that work in the following terms (p. 18).

" Dr. Agramonte, one of the original band of four workers who in 1900 demonstrated that the Stegomyia mosquito, as it was then named, was the carrier of the virus of yellow fever, and so settled for all time the problem of the mode of transmission of that disease, is of opinion that the only true scientific test of the validity of Dr. Noguchi's claim is to inject into a human being the virus which has been discovered. This Noguchi has already done with animals, in which he states that he has reproduced the disease. Dr. Agramonte definitely challenged Noguchi to do this in his speech at the Conference, and offered to provide the necessary volunteers. I think that as Noguchi is on the staff of the Rockefeller Foundation he was justified in not accepting the challenge until the matter had been considered by the President. But the challenge must be accepted, as until the point has been decided the value of the serum and vaccine now recommended for clinical use is in doubt, and further research on different lines is at a standstill and in this matter we cannot afford to wait. In the case of relapsing fever and trench fever a similar test was carried out in England with volunteers and no harm resulted. Dr. Agramonte's men are ready and there should be no difficulty in arranging the conditions. No moral responsibility will rest upon the Rockefeller Trustees or on Dr. Noguchi whatever may happen."

What has since happened appears to justify the suggestion as to the immediate necessity for a crucial test.

The extensive use of a serum based on a view of the disease not generally accepted ; the attempt to introduce the term " West African Yellow Fever" needing as a preliminary a careful and prolonged study of the clinical aspect of the disease in America and West Africa and proof of the presence of features justifying such a differentiation in the nomenclature are serious departures from the true spirit of Science, which is based on accuracy and proof.

In the Final Report of the Yellow Fever Commission (West Africa) will be found a " Scheme for Further Research in Yellow Fever " drafted by Dr. CONNAL of the Research Institute, Lagos, and adopted by the Commission. This opens as follows.

" Scheme for a Research on Yellow Fever.

Attempted transmission of Yellow Fever to monkeys and other animals.

A. By direct inoculation with blood from a case of Yellow Fever.

B. By indirect inoculation by infected *Stegomyia fasciata.*"

From this it will be seen that had the work of the Commission been continued after the war its first object would have been to endeavour to discover a monkey susceptible to yellow fever. This may possibly have been the source of inspiration for the fruitful work of Dr. Adrian STOKES and his colleagues. We should have begun with the Red Howler monkey if we could have obtained a supply, as Dr. Andrew BALFOUR, then a Member of the commission, had informed us of the tradition that in Trinidad there was always an unusual mortality amongst those animals before an epidemic of yellow fever. Whether we should have obtained a supply is very doubtful, as Dr. HINDLE has recently discovered. They are difficult to catch, very delicate and generally die on the voyage to this country.

In the view of the writer what is now required is not conferences or an elaborate system of liaison between the various Colonies on the West Coast, but that each within its own borders should apply all the methods known to be of service in the " control " not " eradication " of Yellow Fever and that each one of them should keep its neighbours fully and accurately informed of the measure of success which has so far attended its efforts.

J. K. Fowler.

LANE (Clayton). **The Mass Diagnosis of Hookworm Infection.**—*Amer. Jl. Hyg.* 1928. Vol. 8. May Supplement. pp. 1–148. With 15 figs., 11 charts & 2 diagrams in text. [91 refs.]

This publication represents co-ordination of a vast amount of data already reported upon over a number of years. Twelve years ago Clayton Lane brought under notice the importance of the principle of the control count. A knowledge of the ovum content of the faeces is essential before any inkling can be gained of the percentage of ova which a concentrative technique presents. Up to that time no such knowledge underlay the various techniques recommended. He compared various methods for counting eggs in faeces, devised by himself and by others. These counts showed, too, that every concentrative technique had its limit of effective concentration and if tried too highly failed in its delivery of eggs. Ignorance of this later discovered principle had tended to bring microscopical diagnosis into disrepute. The technique giving the highest average collection of eggs with the least variation proved to be Clayton Lane's " D.C.F." procedure pushed to finality. The most erratic and least dependable of all methods in general use was the caustic soda counting method of Stoll; its failure being due partly at least to the clumping of faecal material and the solvent action on the eggs. Where accuracy is essential, no alternative exists to D.C.F. pushed to finality. This technique consequently must be used to test the value of all concentrative techniques. Adverse criticism which has been made on this technique either traverses established physical laws or neglects that complete disintegration of faeces which is necessary before any concentrative technique can collect eggs apart from faeces proper. D.C.F. used diagnostically (i.e., examination of the cover after the first spin and after rapid lift) delivers on the average 80 per cent. of the contained ova in 1 cc. of a lightly or fairly lightly infected stool. This average is far higher and the variations from it far less than those displayed by any other diagnostic technique. Since the minimum ovum content normal for hook worms (that is, the number of eggs oviposited by a single normal female) is not less than 33 eggs per gram, D.C.F. used diagnostically could display with certainty a single female hookworm normally ovipositing. This is not so with other techniques, so that the statements of the percentage of infection in any country which do not make clear the diagnostic method employed are without scientific value. But a technique selected for mass diagnosis must be cheap as well as accurate, and this can be best attained by bringing the stools to a central laboratory. Provided the temperature does not exceed 30° C., except for brief periods, stools brought under water to a central laboratory can be accurately estimated even when a month old and can be submitted to mass methods in disintegration, in centrifuging and in herding of eggs with the result that the majority of the eggs from 1 cc. of stool can be collected upon an area of 9 sq. mm. If eggs are present in conditions which imply normal oviposition they can always be detected in the herd. With a single twelve-tube centrifuge, two sweepers and two microscopists can prepare and examine a quarter of a million specimens a year. The high diagnostic capacity of this method therefore makes practicable the humane and scientific treatment of populations in the mass and the elimination of that herd treatment which in Clayton Lane's opinion is ethically unsound.

R. T. Leiper.

REPÚBLICA ARGENTINA. **Segundo Congreso Nacional de Medicina, Buenos Aires (1 al 8 de octubre de 1922). Actas y trabajos. Tomo VI. Bibliografia de Hidatidosis.** [Bibliography of Hydatid Disease.]—714 pp. 1927. " Las Ciencias." Libreria y Casa Editora de A. Guidi Buffarini, Junin 845—Buenos Aires.

This bibliography of the hydatids has been compiled by Señor Juan TUMBURUS, Librarian of the Faculty of Medicine at Buenos Aires. It

contains well over 7,000 references, even allowing for a certain duplication of entries arising from the classification adopted. The classification, which at first appears over-elaborate, may prove useful to those wishing to study particular aspects of hydatid diseases. The compiler gives his references both chronologically arranged, covering the period from 400 B.C. to A.D. 1925 (the references from the beginning of the 19th century being grouped by decades) and geographically arranged under countries. Other sections deal with age incidence, location of lesions, various methods of diagnosis, serum and other reactions, lines of treatment (drugs, surgery, etc.) and with prophylaxis. The volume bears evidence of much work and, with so large a task to perform, it is not surprising if the result stops short of perfection. It seems regrettable that these independent efforts to compile comprehensive bibliographies of the world's literature on particular subjects are still necessary. There is an urgent need for the organization of such work territorially. If the uncoordinated energy now expended on bibliographical publications by scattered individuals and bodies were systematized, with national bureaus collecting the bibliographical data for their respective countries and classifying them on an agreed system, it would be relatively easy to assemble in one list the references on a particular subject so as to form a really authoritative and comprehensive bibliography.

R. L. S.

GREGG (A. L.) [M.A., M.D., M.Ch., B.A.O. (Dublin), D.T.M. & H. (Lond.), L.M. (Rotunda Hospital), Lecturer to Nurses at, and late Medical Superintendent of, the Hospital for Tropical Diseases, London.] **Tropical Nursing. A Handbook for Nurses and others going abroad.** With a Foreword by the Hon. Sir Arthur STANLEY, G.B.E., C.B., M.V.O.—pp. xi+199. With 11 figs. 1929. London, Toronto, Melbourne & Sydney: Cassell & Company, Ltd. [6s.]

In the Preface this book is referred to as a newly born infant, the "accoucheurs" being Messrs. Cassell & Co. Certainly it is "only a little one," but, on that account, more convenient to carry about in pocket or bag. We are also informed that the cover is insect-proof, an excellent thing in regions where termites and cockroaches abound. The Introduction and first chapter deal with difficulties met with in a tropical environment and with personal hygiene necessary for the care of the nurse's health and for her personal comfort. Then follow sections on diseases generally found in the tropics. These sections are arranged in alphabetical order and they contain all that a nurse need know of tropical disease and perhaps more. We are surprised to find no mention of the enteric fevers and to one section the reviewer distinctly objects. It is headed "Climatic Bubo" and the author states that "The condition is of venereal origin, but the infecting organism has not definitely been identified." Buboes, in the groin or elsewhere, may arise from causes other than syphilis or plague but they are not caused by climate. Throughout the medical sections instructions, more or less sufficient, are given as to nursing and diet: but much is missing which a nurse ought to know but which she will have picked up if she has done practical work in a hospital before going out to tropical countries. Bedsores are referred to once: but the nurse is not told how best to prevent them or how to treat them. The use of the bedpan and of the thermometer do not appear in the index, nor is there any reference to important variations in respiration, nor again to the protection of and from sputum as in tuberculosis, which is very prevalent in tropical and sub-tropical regions. A short chapter on technique and a most useful one on "Care of the Eyes" completes the book. There is also a glossary of medical terms and an index.

J. H. Tull Walsh.